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A ROENTGEN STUDY OF THE PHYSIOLOGIC AND PATHOLOGIC CHANGES IN THE MAMMARY GLAND

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AND
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The roentgenologic examination of the mammary gland offers a valuable addition to the present diagnostic methods for the preoperative recognition of cancer as well as of other pathologic states in the breast. Following the first report of Warren,[1] evidence has accumulated [2] showing the value of roentgenograms in establishing the presence or absence of a mass, defining its mammary and axillary extensions and usually its character. Nonmalignant conditions are shown, and the examination may be of great prognostic import.[3]

The mammary gland lends itself readily to roentgen examination. Projection of the gland may be made with a minimum of distortion and with very little superimposition of other structures. For the examination the patient is placed obliquely on the roentgenographic table. The subject lies on the arm corresponding to the breast being examined, while holding the other breast out of the way with the free hand. The clothing over the breasts is removed. The central ray is directed along an imaginary line from the sternal to the axillary base of the gland. The Potter-Bucky diaphragm and double intensifying screens are used. The factors are a current of from 60 to 70 kilovolts at 30 milliamperes, with an exposure of from three to six seconds. Roentgenograms of both breasts are taken as a routine. The negative should include the axilla. In sagging breasts a pad of cotton may be used to support the gland without interference with the roentgenographic result.

On a properly executed roentgenogram of the breast there is a smooth narrow area marking the separation of the breast from the pectoral muscles. The breast structures appear as a pyramid with the apex at the nipple. Fine striations are seen passing from the broad base converging to a narrowing band that passes to the nipple. The nipple with the margin of the skin in profile should appear. The mass of the gland appears as irregular, soft, mottled areas with regions of relative nonopacity representing the fatty tissue of the stroma (case 1).

From the Diagnostic Department of the Research Hospital.

Read before the Section on Radiology at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

1. Warren, S. L.: A Roentgenologic Study of the Breast, Am. J. Roentgenol. **24**: 113 (Aug.) 1930.
2. Lockwood, I. H.: Roentgen Ray Study of the Mammary Gland, South. M. J. **25**: 903 (Sept.) 1932.
3. Fray, W. W., and Warren, S. L.: Stereoscopic Roentgenography of the Breasts, Ann. Surg. **95**: 425 (March) 1932.

DEVELOPMENTAL CHANGES

The roentgen study of the female mammary gland reveals little before from the sixth to the seventh year. At this time the parenchyma appears as a relatively dense, approximately rectangular area just above the muscle plane. From this age until the advent of puberty there is a progressive increase both in the bulk of the gland and in the linear markings or striations. There is a steady differentiation of the opaque basilar mass into myriads of fine striations with a relative decrease in the amount of stroma as compared to parenchyma. The gross and histologic changes have been described [4] that correspond to the progression observed on the roentgenograms.

Roentgen examination of the breast a short time before the onset of the menses shows evidence of activity in the accentuation of the striations, a shaping pyramid and differentiation of the childhood basilar mass into fine lines but without the hazy appearance seen just premenstrually. With the onset of the menses the changes reproduce those in the adult gland but on a smaller scale. Opportunity has been afforded to examine identical twins one of whom had menstruated and the other had not; these differences and the changes in the breast coincident to the establishment of menstruation were strikingly shown.

CLASSIFICATION

It became evident from the roentgen study of not only "lumpy" and "shotty" breasts but of apparently normal breasts that the usual classification based on chronic mastitis and chronic cystic mastitis was inadequate. Dr. F. C. Narr, pathologist to the Research Hospital, has reviewed the sections from the cases in which operation was performed in the light of Cheatle's [5] meticulous work. This has given a histologic basis for the classification of the roentgen characteristics to follow and has proved to be a satisfactory concept and one that allows the microscopic picture of the breast to be predicted.

Cheatle [5] has introduced two new terms based on a study of whole sections of many breasts, mazoplasia and cystiphorous desquamative epithelial hyperplasia. He considers the certain type of desquamation of epithelial cells in the terminal ducts and their acini accompanied by hyperplasia of the pericanalicular and periacinous connective tissue and often with the formation of ducts and acini as "mazoplasia," which is a physiologic process. The mammary gland exhibits these changes at puberty, during each menstrual cycle, during pregnancy and lactation and at the menopause. Mazoplasia may lead to the formation of solid benign tumors that show no tendency to malignant degeneration.

4. Deaver, J. B., and McFarland, J.: The Breast, Philadelphia, P. Blakiston's Son & Company, 1917.
5. Cheatle, G. L., and Cutler, Max: Tumors of the Breast, Philadelphia, J. B. Lippincott Company, 1931.

These can be recognized with rare exception by roentgen examination.

Cystiphorous desquamative epithelial hyperplasia begins as desquamative epithelial hyperplasia which ends in the formation of cysts. The pathologic interest attached to this state depends on the sequence of events

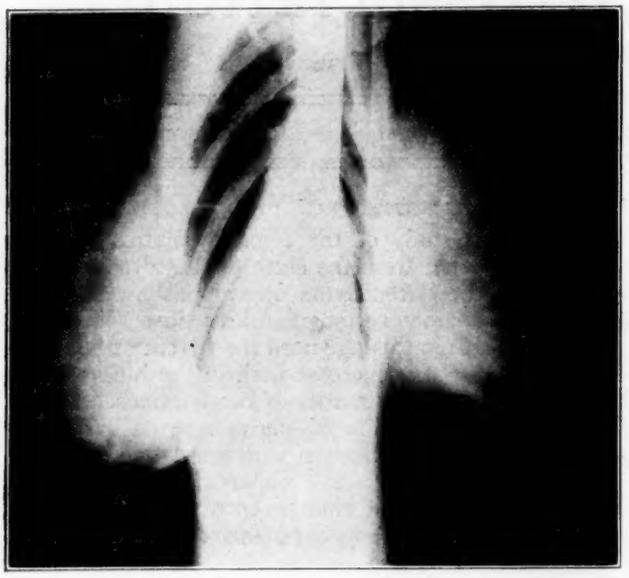

Fig. 1 (case 1).—Normal breast of woman, aged 43.

following this form. This more nearly resembles the state of chronic cystic mastitis and may lead to the formation of large cysts of the blue-domed variety. This stage can readily be interpreted from the roentgenogram. It may proceed further to epithelial neoplasia with the formation of papillomas, an event that occurs usually in the age period from 30 to 40, and later to the malignant neoplasia with frank cancer which usually supervenes from 40 to 50. Cheatle has been able to trace at least 20 per cent of all mammary carcinomas to an origin within lesions of the cystiphorous state. We have been unable to identify any roentgen characteristics of the epithelial neoplasia stage with or without papillomas; however, bleeding from the nipple occurs in a high percentage of those with papillomas, affording a clinical guide for operative intervention. In the stage of malignant neoplasia and frank cancer the roentgen findings are well marked.

The roentgen appearance of both mazoplasia and cystiphorous desquamative epithelial hyperplasia is characteristic; either may occur alone in a breast or the two types may coexist.

The degree of mazoplasia depends on the physiologic state of the breast. On the roentgenogram the mass of the gland appears as myriads of ill defined tortuous white areas. There are relatively few striations. The bridge beneath the nipple is fine and narrow. The entire gland appears hazy. There is a large clear area between the glandular tissue and the derma representing a considerable area of fatty stroma (case 2).

In cystiphorous desquamative epithelial hyperplasia the gland appears to fill all the available space to the derma, leaving only minute transparent areas of stroma apparent. The striations are dense and numerous and converge at the apex of the gland to form a broad, dense band that passes to the nipple. The bulk of the gland is composed of innumerable irregular but well defined opaque masses scattered through which are many circular areas with a sharp well defined periphery measuring from 1 to 4 mm. representing small cysts. The large cysts of the blue-domed variety appear as irregular relatively clear areas in the parenchyma of the gland. Another distinguishing feature is the increase in kilovoltage necessary to produce satisfactory roentgenograms. Negatives made with the usual factors fail to penetrate the gland and show the parenchyma as an undifferentiated homogeneous mass, and only in the periphery may the characteristic changes be found (case 4).

MENSTRUAL CHANGES

Roentgen examination at intervals during the menstrual cycle shows the gland in a constant state of activity. About ten to fourteen days after the menstrual period there are the least signs of activity. Within from four to five days after this there is a definite increase in and an accentuation of the striations with a hazy appearance of the parenchyma of the gland. These changes are progressive and reach a maximum just before menstruation, at which time there is an apparent marked reduction in the relation of stroma to parenchyma. With the onset of the menses there is a gradual reduction in the markings evident as soon as one or two days after the flow is established, with a gradual regression to the resting stage reached from ten to fourteen days after the period.

The degree of roentgen change both in the premenstrual and the postmenstrual phases depends on the previous state of the gland. Normal breasts in which only mazoplasia is evident show the greatest changes. Observations on persons in whom one breast presents mazoplasia and the other mainly cystiphorous desquamative epithelial hyperplasia show the usual changes in

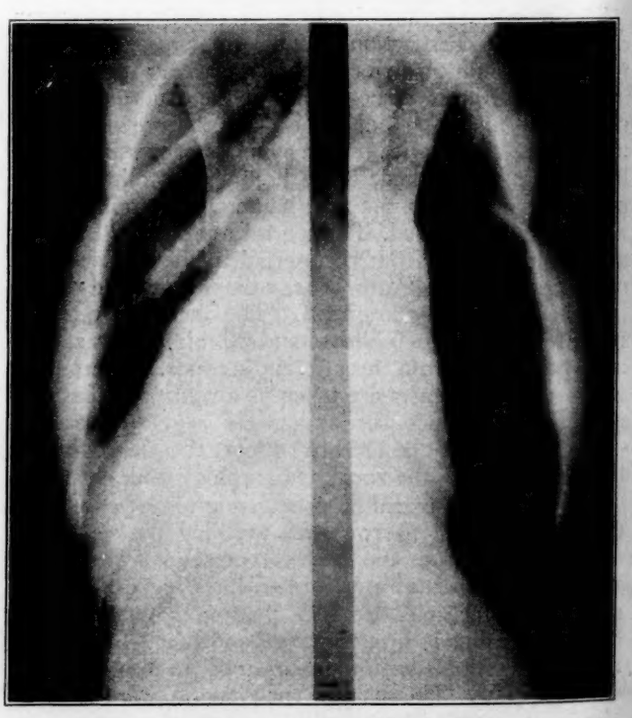

Fig. 2 (case 2).—Mazoplasia of the menopause.

the normal breast while the other reveals minimal premenstrual findings, a definite lag in the regression and failure to reach the state of inactivity of the other breast.

PREGNANCY AND LACTATION

Roentgen examination of the breast about five to six months after conception shows an exaggeration of

the changes seen in mazoplasia. The bulk of the gland is greater with the parenchyma filling the available space and appearing as a relatively dense homogeneous mass. At the time of labor the breasts present a dense appearance in which all striations are lost except at the extreme periphery. Shortly after labor there is regression with reappearance of the fibrous striations and differentiation into the usual well formed pyramid. The hazy appearance and the relative reduction in stroma over parenchyma persists over the period of lactation.

INVOLUTION

Actively functioning ovaries are necessary for the growth and development of the mammary gland.[6] Studies of the breast and ovaries in relation to the menstrual cycle reveal that the corpus luteum of menstruation as well as the corpus luteum of pregnancy causes a physiologic hypertrophy of the breasts. Involution of the breasts occurs after the withdrawal of the germinal phase of the ovaries. Senile involution is characterized by a progressive atrophy and disappearance of the glandular parenchyma and increased deposit of fat tissue throughout the breast.

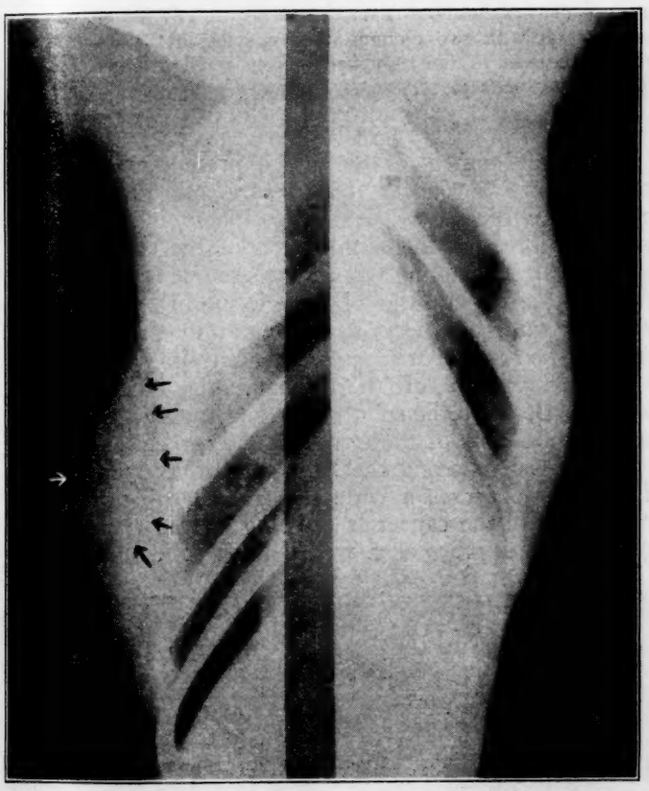

Fig. 3 (case 3).—Smooth mass in the upper pole of right breast. This proved to be a cyst.

The roentgen appearance of the lumpy breast at the menopause is that of a high degree of mazoplasia marked enough that it may appear as the breasts during the first three months of pregnancy.

CASE 2.—Mrs. S., aged 45, complained of swollen, tender breasts for two months. The last menstrual period had occurred thirteen weeks before she consulted us. Physical examination showed an extreme degree of bilateral "lumpy" breasts without evident solid tumor formation. Roentgen examination revealed a high degree of mazoplasia in both breasts (fig. 2). No operation was performed.

6. Cutler, Max: The Cause of "Painful Breasts," J. A. M. A. **96**: 1201 (April 11) 1931.

After the menopause the roentgenogram shows varying degrees of atrophy. There is an increase in the amount of stroma and a reduction in the fibrous striations. The bridge beneath the nipple may retain the wide dense band, evidence of a receding cystiphorous state. The irregularity of the glandular atrophy may lead to mottled soft shadows in the gland representing residual lactation acini[7] or senile parenchymatous hypertrophy,[8] which are not readily mistaken for neoplastic areas. There may be calcification of blood vessels and areas of calcification scattered through the breast. The changes incident to senile involution are shown in case 6.

Fig. 4 (case 4).—Bilateral cysts.

Roentgenograms of women who have had the uterus alone removed show no demonstrable change from the normal. After early castration in which the breast was not apparently the site of previous cystiphorous changes, there is marked involution. The glandular tissue assumes a small area near the base with few striations radially from the nipple. The mass of the gland is rep-

Fig. 5.—Section through cyst wall and adjacent tissue showing the cystiphorous changes.

7. McFarland, J.: Residual Lactation Acini in the Female Breast, Arch. Surg. **5**: 1 (July) 1922.
8. Bloodgood, J. C.: The Blue Domed Cyst in Chronic Cystic Mastitis, J. A. M. A. **93**: 1056 (Oct. 5) 1929.

resented by a relatively nonopaque area representing the replacement stroma of fat and areolar tissue.

Roentgen examination of the breasts of women who have had enough radiation, either x-rays or radium, or combined, such as obtains in carcinoma of the cervix, shows changes that are similar to those of senile involution.

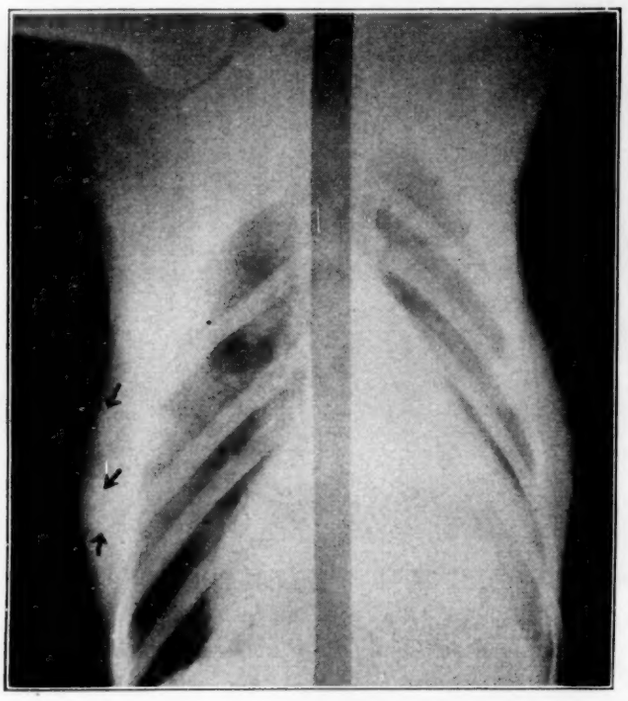

Fig. 6 (case 5).—Fibro-adenomas indicated by arrows.

BENIGN LESIONS

Benign cysts in the presence of mazoplasia may occur. A single example of this appeared as a smooth mass with some displacement of the striations.

CASE 3.—Miss N., aged 32, had noted lumps in both breasts for two years; they had been painful during the past two months. There had been no pregnancies. The menstrual history was normal. Physical examination showed several lumps in each breast—considered to be cysts. Roentgen examination of the right breast showed mazoplasia. In the upper quadrant there was a smooth, dense, circumscribed mass. In the left breast there was evidence of cystiphorous changes with several small cysts (fig. 3).

Large cysts of the blue-domed type are most common in the presence of evident cystiphorous desquamative epithelial hyperplasia. The presence of cysts is often not suspected or, when deep in the substance of the breast, may simulate solid tumors.[8] The roentgen findings are characteristic. They appear as smooth or irregular clearer areas in the substance of the gland. The roentgenogram gives the impression that a portion of the parenchyma has been none too skilfully erased.

CASE 4.—Mrs. F., aged 40, had noticed a lump in the right breast for about a month without an apparent increase in size. Physical examination showed a firm, dense mass in the lower pole deep in the substance of the right breast which was clinically considered malignant. Roentgen examination (fig. 4) showed an irregular clear area in the lower pole of the right breast with two similar areas in the left breast. There was evidence of marked cystiphorous changes in both breasts. The roentgen findings are those of bilateral cysts of the breast. The pathologic report (fig. 5) revealed a blue-domed cyst in the right breast with cystiphorous changes in the adjacent excised specimen.

Solid benign tumors are practically limited to breasts that are the site of mazoplasia. Solid tumors appear as sharply circumscribed areas with a dense periphery. The center of the mass is usually less dense. These tumors are usually multiple. One finds no evidence of cystiphorous changes. The bridge beneath the nipple is narrow and faintly outlined. There is distortion without interruption of the striations. We have been unable to differentiate the roentgen appearance of a single benign cyst from a solid benign tumor in the presence of mazoplasia, except by secondary signs and on the basis of probability. It is believed that transillumination would be invaluable in such rare instances.[9]

CASE 5.—Mrs. R., aged 34, had noted two slowly growing painless nodules in the right breast for fifteen years. She had never been pregnant. She had menstruated only once. Physical examination showed two freely movable walnut-sized nodules in the right breast, considered benign. Roentgen examination (fig. 6) showed a moderate degree of mazoplasia in each breast with two circumscribed nodules in the upper and middle portions of the right breast, considered fibro-adenomas. The pathologic report revealed fibro-adenomas (fig. 7).

CANCER

Malignant tumors of the breast present many common findings.[10] Cancer appears as a solid tumor, usually with a fairly well defined periphery indicative of more compression than infiltration of the surrounding structures. Extending from the mass one may observe fine projections into the adjacent tissue in one or more regions, with feathery extensions into the pectoral muscles and irregular masses extending into the axilla, with involvement of the axillary gland frequently shown. Between the solid tumor and the skin one may see accentuations of the striations interpreted as malignant extensions along the ligaments of Cooper. One frequently observes a wide tumor bridge beneath the nipple where the cancer is growing in this region. A cancer cyst appears as a well defined solid tumor but

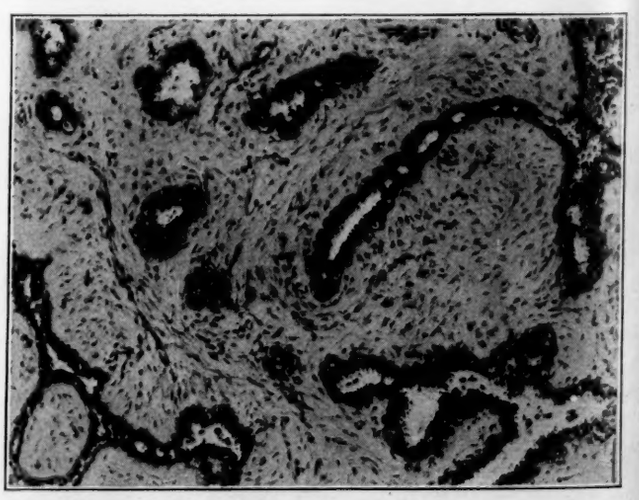

Fig. 7.—Low power section of fibro-adenoma removed.

with feathery projections in some part of the mass and characteristic malignant masses in other parts of the breast.

The exact roentgen appearance of the tumor is modified by the previous state of the gland. Most cancers are apparent in the decade from 40 to 50, when the

9. Cutler, Max: Transillumination as Aid in Diagnosis of Breast Lesions, Surg., Gynec. & Obst. **48**: 721, 1929.
10. Lockwood, I. H.: Radiation in Carcinoma of the Breast, J. Arkansas M. Soc. **28**: 51 (Aug.) 1931.

involutional changes have left the gland made up almost entirely of stroma in which the solid tumor stands out with the fatty tissue, making an excellent contrast medium.

CASE 6.—Mrs. P., aged 71, had had inversion of the right nipple for three years, with serous discharge from it. The breast had been painful since an injury three months prior to admission. The patient has had eight pregnancies. The menopause had occurred twenty years previously. Physical examination showed a mass in the medial upper quadrant of the right breast which was freely movable and tender, but was considered malignant. Roentgen examination (fig. 8) showed involutional atrophy which permitted the irregular infiltrating mass in the upper portion of the right breast to stand out clearly. The pathologist reported a mass 3.5 cm. in diameter with an intracystic papilloma (fig. 9) and adjacent carcinoma (fig. 10).

In the presence of mazoplasia, which is frequent in the early involutional stages, the appearance of the solid tumor with the feathered or serrated periphery is not altered.

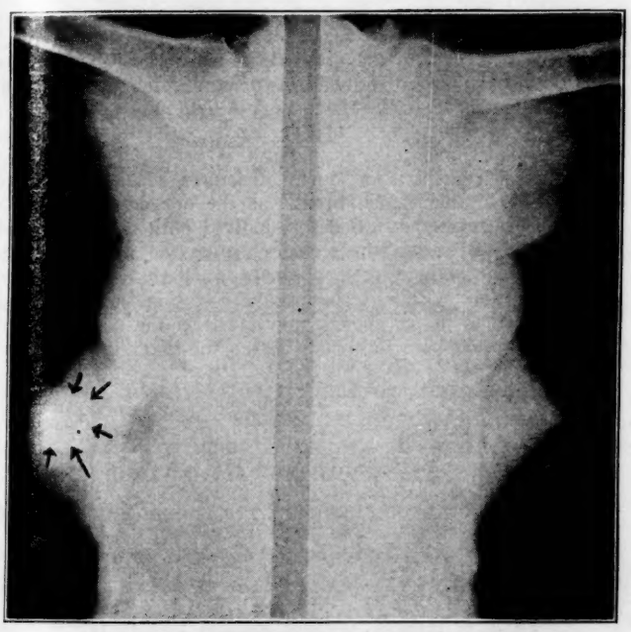

Fig. 8 (case 6).—Malignant tumor indicated by arrows.

The recognition of cancer in the presence of cystiphorous desquamative epithelial hyperplasia or chronic cystic mastitis has always presented a clinical problem. Clinical recognition is usually late. The density of the gland and the usual mottled areas make the roentgen examination difficult but more satisfactory than palpation. By increasing the kilovoltage (average increase 10) one may obliterate in a great measure the cystiphorous areas but leave the denser cancerous areas outlined. We consider this technical point of increased penetration in the cystiphorous state as the most valuable means in the recognition of early cancer in this type of breast. Transillumination when possible may give confirmatory evidence.

Other uses for roentgen examination have been suggested. Since the incidence of carcinoma in the remaining breasts is 10 per cent,[11] periodic examination should detect the early malignant changes. One may differentiate mazoplasia from the cystiphorous state. Roentgen examination affords a permanent record for the serial study of the changes in the mammary gland; it may be used as a guide in roentgen therapy in the cystiphorous state, and it may also be used as an additional reassuring measure to the person with the fear of cancer but no evidence of malignant disease. An increasing number of women present borderline and early lesions[12] in which roentgen examination is often conclusive.

Fig. 9.—In this breast there is a benign intracystic papilloma.

The final test of cancer still remains—examination of the tissue under the microscope. In those lesions of the breasts that are at all doubtful, exploration and study of sections are strongly urged.

CONCLUSIONS

1. The roentgenologic appearances of the developing mammary gland and the changes during the menstrual cycle, pregnancy and lactation and the involutional phase are described.

2. Classification on the basis of Cheatle's work has been made with histologic confirmation.

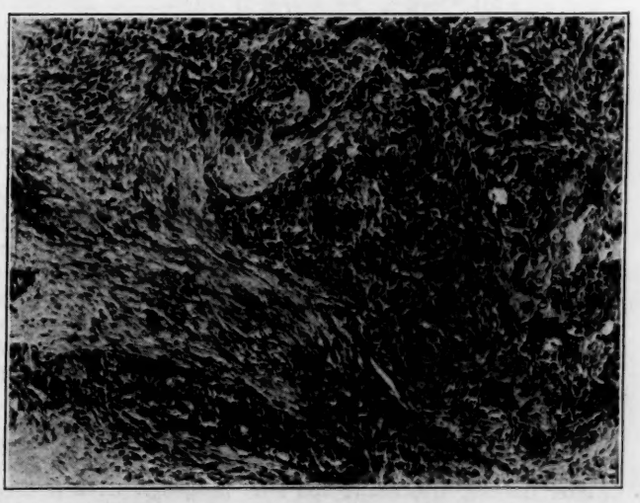

Fig. 10.—Low power view of frank cancer near the benign tumor.

3. Roentgen examination has proved to be of great value in differentiating benign and malignant lesions.

4. Roentgen examination is not offered as a substitute for exploratory operation. We believe that examination will bring patients to operation at a stage when surgical methods can offer more than palliation in cancer of the breast.

11. Kilgore, A. R., in discussion of Bloodgood, J. C.: Diagnosis of Early Breast Tumors, J. A. M. A. 81: 881 (Sept. 15) 1923.

12. Bloodgood, J. C.: Border Line Breast Tumors, Am. J. Cancer 16: 103 (Jan.) 1932.

ABSTRACT OF DISCUSSION

DR. LEON J. MENVILLE, New Orleans: Correct interpretation and diagnosis of conditions such as the authors have mentioned requires a thorough knowledge of the anatomy and physiology of the mammary gland. I believe that transillumination is of some value, particularly in the instances such as they mentioned, but, as a whole, transillumination in the diagnosis of breast tumor has distinct limitations. Its value in this connection can be compared to the transillumination of the sinuses. All radiologists have found that transillumination in sinus disease is not only uncertain but often unreliable. The authors have perfected a technic which it might be well to observe, should this method of diagnosis be used. By its employment they have been able not only to differentiate between malignant and benign disease but also to demonstrate clearly the physiologic changes in the mammary gland as a result of menstruation and pregnancy. The authors mentioned something about the palpatory method of diagnosis. I hope that the roentgen examination of the breast will eventually make it unnecessary to use the vigorous palpatory method so often employed in the diagnosis of breast tumor. Such a method is necessarily painful and it is dangerous, because it has been shown definitely by animal experimentation that a rat with carcinoma, when massaged, will soon show metastasis in the lung. I appreciate the value of gentle palpation, but the inexperienced physician is not always gentle in manipulating the breast. So if this method does nothing else but obviate the danger of vigorous, active palpation of breast tumors, it will have done a great thing. I should like to ask whether the authors have had occasion to examine roentgenologically cases of gynecomastia, and, if so, with what results. Biopsy must be the final verdict in cases of breast tumors, but a biopsy made by an incompetent pathologist is of far less value than a competent roentgenologic study.

DR. EUGENE P. PENDERGRASS, Philadelphia: At the hospital of the University of Pennsylvania Dr. Philip J. Hodes and I have found it difficult to recognize small tumors in large breasts, and in the hanging type of breasts. In examining large breasts, we have found it necessary to increase the exposure considerably, and in the hanging type of breasts to support the mammary gland with a nonopaque substance so as to see the breast in silhouette rather than end on. There is a marked variation in the normal appearances of the breasts in the same individual. We have photographed all patients and were astounded by the degree of difference in size between the breasts of the same individual. This seems to be the rule rather than the exception. We have seen lymph nodes in patients who have been regarded as normal. In these cases, however, we have not been able to follow the case through at the end of operation for pathologic diagnosis because these patients have not been operated on. I believe that it has been the opinion of a number of observers that the presence of visible lymph nodes in the axilla should be regarded as evidence of either an inflammatory or a malignant process. For the present, we have taken the stand that small visible lymph nodes in the axilla are not incompatible with a healthy breast and axilla. We feel very much about this as one felt about the healthy adult chests in the past. In other words, a healed tuberculous lesion is compatible with a healthy adult chest. Therefore, lymph nodes in the axilla may be evidence of a past inflammatory process which at the present time is of no significance. We have found it difficult to distinguish between engorgement of the mammary gland in pregnancy, lactation and menstruation. Breasts have been examined before and after nursing, also before and after pumping. Even in breasts after the removal of 6 ounces of milk, we have been unable to demonstrate any definite roentgen changes. One of the easiest types of breasts to interpret is the involuting breast, following the menopause. Here the linear striations are quite fine, much finer than those seen in younger persons. Therefore, pathologic changes are somewhat easier to interpret. We have noted fine linear striations similar to those found in the postmenopausal involuting breasts in a case of a young person who has a pituitary tumor. The patient has never menstruated, and, therefore, has never had any of the changes in the breasts that are associated with the menstrual cycle. The diagnosis of benign tumors seems to be one of the easiest roentgen interpretations to make. They are circumscribed. They displace the linear striations and do not infiltrate.

DR. IRA H. LOCKWOOD, Kansas City, Mo.: In answer to Dr. Menville's questions regarding gynecomastia, we have had two such cases. The hypertrophy of the breast tissue shows the characteristics of mazoplasia. The muscle plane is less distinct in the male. There is a marked difference in the contour, shape and size of the breasts. Dr. Pendergrass has shown these differences nicely in his photographs. I believe that these changes are shown more distinctly in the roentgenograms. The differential diagnosis of lymph node enlargement may be difficult but in malignancy the node is usually round, smooth and dense. Inflammatory nodes are irregular and faintly outlined. Changes in the breasts during the menstrual cycle are more marked in those breasts which show mazoplasia. Negatives made at the onset of menstruation show a soft hazy appearance of the gland with regression until the midpoint between the period is reached. In those breasts showing cystiphorous desquamative epithelial hyperplasia, little change is shown between the negative made midway between the menstrual cycle and those made just before the onset of menstruation. The majority of carcinomas of the breast occur after the involutional changes have taken place. It is difficult to differentiate between cysts and solid benign tumors in the presence of mazoplasia. In our series only a single example of a cyst in the presence of mazoplasia has occurred, and we have failed to find a benign solid tumor in the cystiphorous state. We have not seen a case of syphilis of the breast. Tuberculosis appears as a cystic lesion. The tail of the breast may extend high; it is readily projected with little superimposition of other structures. There are many variations of the normal breast, as the normal appearance of mazoplasia, cystiphorous desquamative epithelial hyperplasia, developmental stages, the changes during the menstrual cycle, the enlargement incident to pregnancy, and the regression after the menopause. Rapid technic may be of some importance; we have failed to notice enough movement on the negatives made with 30 milliampere technic to lessen the diagnostic value.

THE CAUSE OF PRIMARY DYSMENORRHEA

WITH SPECIAL REFERENCE TO HORMONAL FACTORS

EMIL NOVAK, M.D.
AND
SAMUEL R. M. REYNOLDS, M.D.
Fellow in Medicine, National Research Council, 1931-1932
BALTIMORE

One of the important unsolved problems in gynecology is the cause and treatment of so-called primary or essential dysmenorrhea. This condition is responsible, in the aggregate, for much human suffering and invalidism. Its great frequency, the inadequacy of all the many theories of its causation which have been offered and the general unsatisfactoriness of its treatment have made it one of the bugbears of gynecology. And yet investigation of the problem has received comparatively little attention, much less than its importance would seem to justify.

The menstrual pain in cases of this type occurs frequently in patients whose pelvic organs are quite normal from an anatomic standpoint. Most characteristically, the pain begins a day or two before the onset of the menstrual bleeding, and is commonly, though not always, of a colicky, spasmodic character. Usually it disappears after the menstrual bleeding has been well established. The clinical aspects of this condition will

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

not further be discussed in this paper, which is concerned chiefly with the matter of its etiology and mechanism.

THEORIES OF ETIOLOGY

Mechanical Obstruction.—Many theories have been propounded to explain the causation of primary dysmenorrhea. One of the oldest, which is still quite widely held, is that the pain is due to obstruction to the exit of the menstrual blood from the uterine canal, most often because of anteflexion of the uterus. This view, which appears to have been first suggested by Mackintosh in 1832, achieved quite general acceptance for many years and became the basis for the treatment of the disease. It was strongly endorsed by the early leaders of gynecology in this country. For example, it was Marion Sims who, in a paper entitled "Nulla Dysmenorrhea nisi Obstructiva," asserted that "there can be no dysmenorrhea, properly speaking, if the canal of the neck of the uterus be straight and wide enough to permit a free passage of the menstrual blood."

With the passage of years, however, this theory has been abandoned as explaining more than perhaps a small minority of cases. Many arguments can be adduced against it. For example, anteflexion is often observed in the absence of dysmenorrhea, while, on the other hand, the most severe types of menstrual pain may occur in patients whose uteri show no anteflexion, or, for that matter, any other gross abnormality. Moreover, it has been shown that, even at the height of menstrual pain, a probe can be easily passed into the uterine canal, with no evidence of obstruction of any kind. This observation was made by one of us (Dr. Novak) in a small series of cases many years ago. It has been computed that the rate of discharge of menstrual blood in the normal woman averages only about two thirds of a drop per minute, and it is difficult to believe that anteflexion could produce sufficient obstruction to interfere with the exit of such small amounts.

For such reasons as this, the theory of mechanical obstruction is scarcely tenable, in spite of the relief which at times seems to follow cervical dilation. This is not to say that, in the occasional case, a genuine obstructive dysmenorrhea may not occur from such a cause as a ball-valve polyp or a fibroid that may perhaps choke the uterine or cervical canal.

Hypoplasia.—With the lessened credence in the obstructive theory, the view has gradually taken root that the chief factor in the production of primary dysmenorrhea is a hypoplasia of the pelvic organs, more particularly the uterus. Some have linked the two factors of obstruction and hypoplasia together, asserting that anteflexion is in itself an evidence of hypoplasia, and that it in turn gives rise to obstructive dysmenorrhea. While it is certainly true that in fetal and early postnatal life the uterus is often anteflexed, this is not invariably so, nor is there any evidence that the occurrence of anteflexion in adult life means that the uterus is congenitally hypoplastic, for often it is of perfectly normal size.

Even when the uterus is markedly hypoplastic, as in the so-called uterus infantilis, there is often no menstrual pain whatsoever, while, on the other hand, one frequently observes severe primary dysmenorrhea when the uterus is of normal size. After all, perhaps the chief evidence against the importance of the developmental factor lies in the fact that primary dysmenorrhea is often an acquired disorder. A careful history of such cases often reveals the fact that the patient, after the onset of puberty, menstruated without pain for a short or perhaps a long time, after which severe menstrual colic made its appearance. Such a history was noted in nearly one half (forty-two) of the last hundred cases observed by one of us (Dr. Novak). It would be difficult to explain this fact on the basis of the developmental theory of dysmenorrhea. Nor is any satisfactory explanation of the mechanism of the pain available even if we grant the rôle of hypoplasia, in spite of the fact that a number have been suggested.

Psychogenic Factors.—Nothing is more certain than that the psyche frequently plays an important, perhaps essential, rôle in the production and perpetuation of menstrual pain. There are some gynecologists, notably J. Novak and M. Harnik,[1] who believe that all cases of primary dysmenorrhea are explainable on this basis. These authors asserted that careful investigation will practically always reveal that a psychic trauma of one sort or another lies at the bottom of the first attack of dysmenorrhea, and that the recurrence of monthly attacks is the result of the anxiety or fear thus subconsciously associated with the function. Most often, according to these authors, the psychic trauma has a sexual basis, but in other cases its character is quite different. For example, any mental shock at the menstrual period may thus start the patient on a dysmenorrheic career, as may such factors as repugnance at the offensiveness of the menstrual discharge.

The uncovering of these various psychogenic factors, according to Novak and Harnik, does not necessarily entail psychoanalysis or expert psychiatric examination, but can usually be accomplished by well directed gynecologic consultation. As with other psychoneuroses, the cure is accomplished as soon as the patient appreciates that her monthly attacks are conditioned on her subconscious reflexes rather than on any organic disease of the generative organs. These authors reported a series of 168 cases treated along these lines with complete cure in 71 and marked improvement in 89.

That many cases of dysmenorrhea are to be explained in this way admits of no doubt, although few gynecologists will accept the general applicability of this explanation for all patients. Merely to stigmatize these patients as "hysterical" or to treat them with the superficial "psychotherapy" so often employed in their management is inadequate and unsatisfactory. The gynecologist must win the patient's confidence to such an extent that she herself will grasp the logic of the explanation which the physician must take the time to give. Once the patient's mind is properly ventilated in this way, the mischief-provoking fears and anxieties lurking in her subconscious mind will die a natural death.

In this connection a word may be interpolated as to the value to the young girl of simple instruction as to the naturalness of the menstrual phenomenon, and particularly that it should cause no worthwhile interference with her normal activities. While the mother is the logical instructor in this respect, she is often ill fitted for the purpose. Indeed, if she herself has suffered with dysmenorrhea, a powerful suggestive factor is at once brought to play on the daughter, who may well come to look forward to the menstrual period as a time to expect suffering and discomfort. We shall not dwell further on this subject, but it is refreshing to note that its importance appears to be becoming appreciated

1. Novak, J., and Harnik, M.: Med. Klin. **25**: 251 (Feb. 15) 1929; Ztschr. f. Geburtsh. u. Gynäk. **96**: 239, 1929.

by school and college physicians and by others having to do with the physical health of growing girls.

The undoubted rôle played by the psychogenic factor in many cases of dysmenorrhea at once brings into question the reliability of observations as to therapeutic results after various forms of treatment, whether medical or surgical. For example, dilation of the cervix, a time-honored method of treatment in severe cases, at times yields excellent results. Are these due to the psychic factor, or are they to be directly credited to the simple dilation of the cervical canal? The same difficulty is encountered in evaluating the results of the various forms of medical and endocrine treatment which have been proposed.

Constitutional Factors.—There are other factors which may be concerned with the production of primary dysmenorrhea. For example, there is no doubt that in some cases dysmenorrhea is merely the reflection of a condition of constitutional or nervous depravity entailing a lowered threshold of pain. In such patients the slight discomfort which might be associated with normal menstruation is magnified into an actual pain. Many cases of dysmenorrhea can be cured without any direct treatment of the pelvic condition, simply by building up the patient's general health and insistence on proper general hygiene, especially exercise, with little or no limitation of the latter because of the menstrual periods. This is a subject in itself, which cannot be elaborated on here, except to stress its importance.

Endocrine Factors.—Many authors have discussed the possible importance of endocrinopathies of one sort or another in the production of dysmenorrhea, but little of a definite nature is known concerning this subject, except, of course, by certain omniscient manufacturers of organ extracts. There is no characteristic association of dysmenorrhea with any of the recognized endocrinopathies, although the intimate relationship of the pelvic organs with most of the endocrine glands makes an endocrinopathic dysmenorrhea seem at least theoretically possible. The one definite body of evidence on this point will be discussed later in the article.

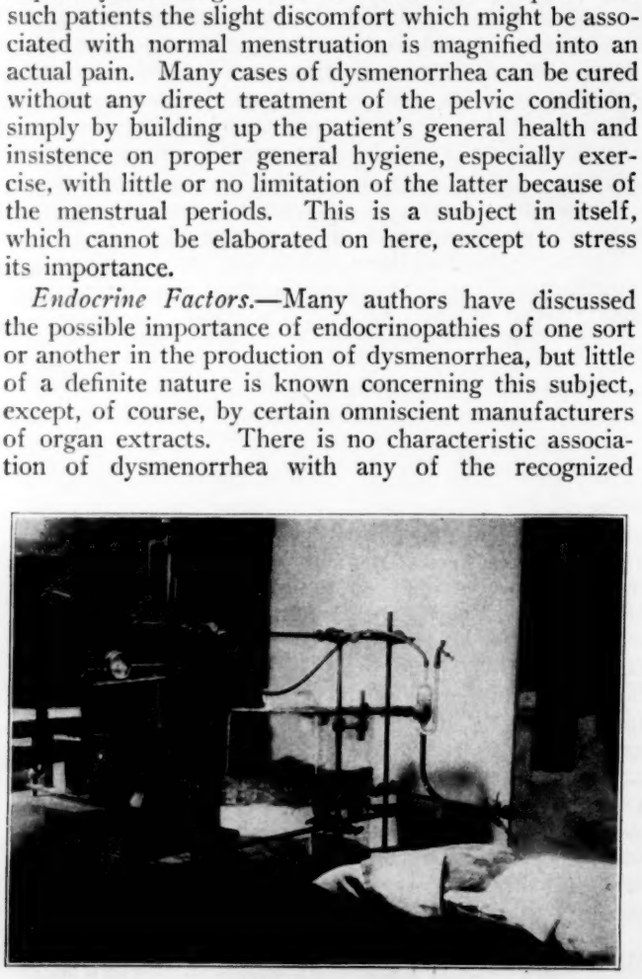

Fig. 1.—Mode of recording from the uterine fistula of the unanesthetized rabbit. Shows air-water system connecting an intra-uterine balloon with the Brodie bellows used for obtaining kymograph tracings.

THE IMMEDIATE CAUSE OF THE PAIN

Whatever the underlying cause of the pain in primary dysmenorrhea may be, there is much reason to believe that the immediate cause is a spasmodic contraction of the uterine muscle, as has been suggested by various other investigations (Emil Novak [2] and J. Novak and M. Harnik [1]). The very nature of the pain would suggest this. Up to recently, however, there had been no knowledge of the factors governing the rhythmic contractility of the uterine musculature. In the past few years there has been an awakened interest in this subject. These investigations have been directed chiefly to a study of the cyclic influences concerned in uterine irritability. Knaus,[3] Siegmund and Kammerhuber,[4] Schultze [5] and others have published important studies from the German laboratories, while in this country similar investigations have been contributed by Van Dyke and his co-workers,[6] Frank,[7] Durrant and Rosenfeld,[8] Reynolds,[9] Reynolds and Friedman [10] and others. One of us (Dr. Reynolds) has called attention to a method which gives the opportunity of studying the uterine contractions of the experimental animal in the unanesthetized state. The advantage of this is obvious in view of the recognized influence of practically all forms of anesthesia on uterine motility.

Fig. 2.—Close-up view of catheter-tubing coming from intra-uterine balloon located in uterine fistula, showing two cervices as they appear through a midline abdominal opening. The surface exposed is that of reflected vaginal mucosa.

The animal utilized for this method is the rabbit. The upper portion of the animal's vagina is cut across; the lower end is turned in and buried, while the upper end is brought out through the abdominal incision, to which it is sutured. In this way there is created a fistula which gives ready access to the animal's two

2. Novak, Emil: The Atropin Treatment of Dysmenorrhea, J. A. M. A. **64**: 120 (Jan. 9) 1915.
3. Knaus, H.: Ztschr. f. Geburtsh. u. Gynäk. **94**: 219, 1928.
4. Siegmund, H., and Kammerhuber, F.: Zentralbl. f. Gynäk. **55**: 521 (Feb. 28) 1931.
5. Schultze, G. K. F.: Zentralbl. f. Gynäk. **55**: 3042 (Oct. 17) 1931.
6. Van Dyke, H. B.; Bailey, P., and Bucy, P. C.: Am. J. Physiol. **90**: 544, 1929.
7. Frank, R. T.: The Female Sex Hormone, Springfield, Ill., Charles C. Thomas, 1929.
8. Durrant, E. P., and Rosenfeld, S.: Am. J. Physiol. **98**: 153 (Aug.) 1931.
9. Reynolds, S. R. M.: Am. J. Physiol. **92**: 420 (March) 1930; **97**: 706 (Sept.) 1930; Endocrinology **15**: 193, 1932.
10. Reynolds, S. R. M., and Friedman, M. H.: Am. J. Physiol. **94**: 696 (Sept.) 1930.

uteri. Through the introduction of a small balloon into the uterus, the effects of various stimuli on the uterine contractions can be easily studied and recorded by an air-water manometer with a kymographic attachment (figs. 1 and 2).

By means of this technic it has been possible to show that the uterine rhythmic contractions exhibit definite variations which may be correlated with the various sexual states. During estrus there is marked uterine activity, while during the anestrous period there is only feeble uterine activity, or none at all. Castration can be shown to produce complete quiescence of the muscle, preceded by progressive lessening and irregularity of the contractions. By replacement therapy with theelin (folliculin) in the castrated animal, the uterine motility is restored, demonstrating that theelin or female sex hormone is the factor concerned with this property (fig. 3). Experiments with other endocrine preparations show that theelin alone possesses this property.

When animals in a state of pseudopregnancy, associated, of course, with corpus luteum activity, are studied, quiescence of the musculature is observed (figs. 4 and 5), this effect being due to progestin.[11] Finally, it has been shown that the injection of the urine of pregnant women, like that of progestin, inhibits uterine motility (fig. 6), while the urine of nonpregnant women produces no effect whatever. A commercial preparation of urine from pregnant women was utilized in these experiments. For the details of these experiments, here merely sketched, the reader may be referred to Reynolds' original papers.

The inhibiting effect of the urine of pregnant women is due to the presence of prolan (Zondek), presumably of pituitary origin, according to most investigators. The term "prolan" is applied, in this paper, to the ovary-stimulating principles, presumably of pituitary origin, described by Zondek as occurring in the urine of pregnant women. It does not refer to a German commercial preparation to which the same name has

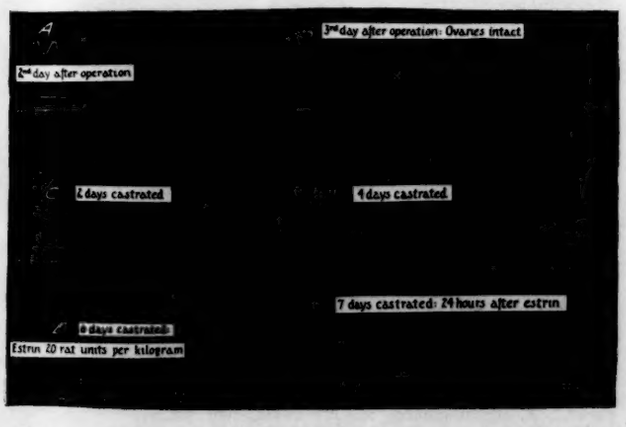
A
3rd day after operation: Ovaries intact
2nd day after operation
2 days castrated
4 days castrated
7 days castrated: 24 hours after estrin
Estrin 20 rat units per kilogram

Fig. 3.—Motility after castration and following administration of estrin (theelin). *A*, second day after operation; *B*, third day after operation; *C*, two days after castration; *D*, four days after castration; *E*, six days after castration (estrin, 20 rat units per kilogram); *F*, seven days after castration (twenty-four hours after estrin).

been given. When given to rabbits showing marked uterine motility, in such small amounts that it does not affect the ovary, it still induces a profound decrease in uterine motility within three or four hours. This relative quiescence persists for several hours, even after a single intravenous injection of as little as 0.05 cc. of a prolan preparation containing 50 rat units per cubic centimeter. Smaller amounts have not been tried. It may be emphasized that no discernible effect can be demonstrated in the ovary after such injections, from which it seems probable that the effect is a direct one on the uterine musculature.

To test this view, that prolan affects the uterine musculature directly, the experiments were repeated

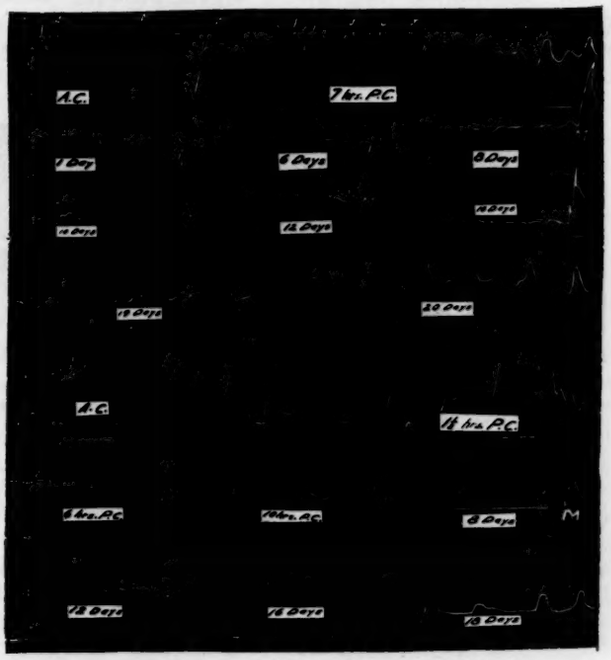

Fig. 4.—Records of uterine motility before coitus and through pseudopregnancy in two rabbits. Both records show profound decrease in motility from six to seven hours after coitus (from three to four hours before ovulation). *A.C.* indicates motility ante coitum; *P.C.*, post coitum, indicating the time in hours or days of records following coitus. *M* indicates mechanical response obtained by applying pressure on the abdomen to indicate potency of balloon and recording system.

on castrated animals, in which a background of marked uterine activity had first been produced by injections of theelin (Reynolds[9]). It was found that a profound decrease of motility regularly followed the injection of prolan. In other words, there is no discernible difference in the effects of small doses of prolan, whether ovarian tissue is present or absent. The latent period, duration and intensity of the effect are exactly similar. For this reason, and because no pronounced structural changes in the ovary are demonstrable, it seems fair to conclude that the action of the substance on the uterine musculature is a direct one.

The use of large instead of small amounts of the prolan preparation would be associated with the possibility of bringing about luteinization of the follicles and perhaps a disturbance of the cycle. However, in monkeys it has been extremely difficult to produce experimental luteinization, and the same thing probably applies to man (Novak and Hurd.[12]).

Although the inhibiting effect of prolan preparations has been demonstrated in vivo in the rabbit, it does not, of course, follow that this applies equally for all other species. Caution demands that allowance be made for species differences on this point, as in so many others in the field of reproductive physiology. Nevertheless, there is good evidence to indicate that we are not dealing with a special reaction peculiar to the rabbit.

The action of prolan, when given in sufficient amount, appears to be rather general, exhibited by

11. Reynolds and Allen: Am. J. Physiol. **102**: 39 (Oct.) 1932.

12. Novak, E., and Hurd, G. B.: Am. J. Obst. & Gynec. **22**: 501 (Oct.) 1931.

many species which have been studied. For example, it can produce stimulation of the ovary to "precocious" activity in the mouse, rat, guinea-pig, rabbit, ferret, dog, monkey and other animals. Since this property is not species specific, it would be strange if the motility effect were peculiar to the rabbit. It is true that Siegmund believes that the uterus of the rabbit differs from that of the rat, mouse and guinea-pig in its response to posterior pituitary extract, after treatment with extracts of corpus luteum. These observations, however, were made on studies in vitro, but similar

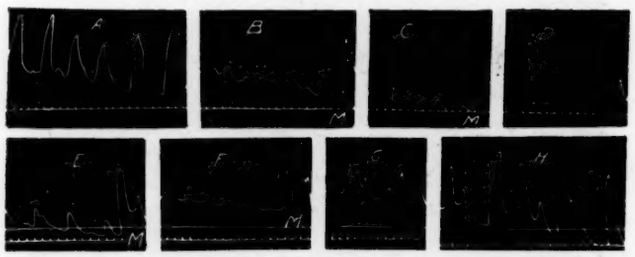

Fig. 5.—Action of progestin (corpus luteum hormone) on spontaneous uterine motility. *A*, normal estral (postpartum) motility; *B*, *C*, *D* and *E*, motility three, eight, twelve and twenty-four hours, respectively, following a single subcutaneous injection of progestin (½ rabbit unit). Second and last injection made just after *E*, *F*, *G* and *H*; motility on first, second and third days after last injection of progestin, showing a return of motility. *M*, as in figure 4. Compare effect here with that seen during pseudopregnancy, after the formation of the corpus luteum (fig. 4).

studies have not yet been made in vivo. The uncertainties of in vitro work have been stressed by Van Dyke and Hastings,[13] Van Dyke, Bailey and Bucy[6] and Reynolds.[9]

Observations on the rabbit appear applicable to man, if one bears in mind that the uterine motility of the estrous phase in the former corresponds to that of the early interval phase in the latter. Furthermore, direct studies have been made by Knaus[14] on man by a technic based on the responses to pituitary extract exhibited by the uterine musculature at different phases of the cycle.

In general, the results obtained by Knaus coincide with those mentioned. He found that not only is the uterus responsive to stimulation by pituitary extract in the first half of the sex cycle, but marked uterine contractions can be recorded as well. After the mid-interval period the uterus is quiescent and is also refractory to stimulation by posterior pituitary extract. Marked motility was noted by Knaus[14] in patients on the second day of menstruation, and also on the eighth and fourteenth days of the cycle. Wittenbeck's observations[15] agree, in the main, with those of Knaus. The studies of Schultze[5] with iodized oil, while ostensibly giving far different results, may be seen, by proper analysis of the technic, to yield results that are quite concordant with those of Knaus.

APPLICATION OF PHYSIOLOGIC STUDIES TO THE PROBLEM OF DYSMENORRHEA

As already stated, the character of the pain in primary dysmenorrhea indicates an origin in heightened and spasmodic uterine contractions. Furthermore, it is suggestive that the pain commonly begins from a day to several days before the onset of menstruation, for it is at about this time that the corpus luteum begins to degenerate. In other words, the height of corpus luteum activity occurs, not at the actual onset of menstrual bleeding, but usually several days before. An illustration of this belated effect of progestin withdrawal is seen in the common observation that if a corpus luteum is excised well before the expected menstrual period, the flow is precipitated, but not usually until from twenty-four to forty-eight hours after the excision.

The fact that the usual onset of menstrual pain coincides with the withdrawal of the corpus luteum influence must, in the light of the physiologic observations sketched, suggest that the cause of the pain is due to a disturbance involving primarily the uterine motility. Female sex hormone, the sole known excitant of uterine rhythmic contractility, is present throughout the cycle, and, according to the investigations of Frank and others, is present in great concentration in the blood during the premenstrual and early menstrual phases.

During the phase of activity of the corpus luteum, extending from ovulation up to a short time, at most a few days, before the menstrual onset, the effect of female sex hormone on uterine contractility is inhibited by progestin, in keeping with the experimental observations that have been described. With the withdrawal of the influence of the corpus luteum, therefore, there is again a female sex hormone-produced excitation of uterine contractions, which, according to the direct observations on man made by Knaus, may be quite pronounced.

This general sequence presumably occurs in all normal women, and yet in only a comparatively small proportion is the heightened contractility of the uterus at this period registered as a real dysmenorrhea. Two explanations suggest themselves in this connection. One, of course, has to do with the heightened sensi-

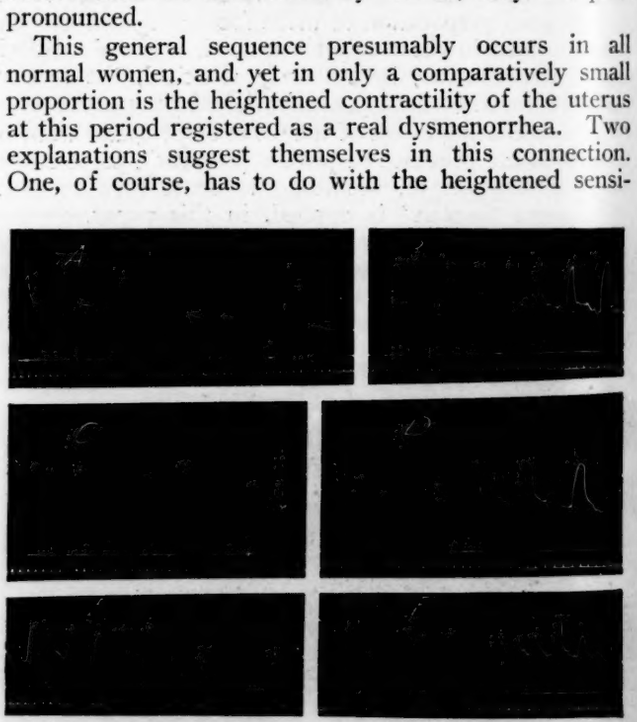

Fig. 6.—Effect of prolan on estrin-induced motility in the castrated rabbit. *A*, theelin-induced motility twenty-four hours following administration of theelin; *B*, motility three hours following intravenous injection of prolan (1 cc., 50 rat units, of antuitrin S); *C*, profound decrease in motility seven hours after injection; *D*, return of motility eleven hours after injection with beginning of waning effect of theelin twenty-four and forty-eight hours after *A*. Note that motility here is still greater than in *C*. (*M*, as in figure 4.)

bility of certain patients to pain stimuli, because of psychogenic, constitutional or other predisposing factors discussed in the early part of this paper. The other is that in some patients there is a real endocrine imbalance between the uterine motility factors, especially female sex hormone and progestin, and that the disturbance may be a quantitative or a chronological one, or both. The nature of the dysfunction cannot of course yet be

13. Van Dyke, H. B., and Hastings, A. B.: Am. J. Physiol. **83**: 563 (Jan.) 1928.
14. Knaus, H.: Zentralbl. f. Gynäk. **53**: 2193 (Aug. 31) 1929.
15. Wittenbeck, F.: Arch. f. Gynäk. **142**: 446, 1930.

discussed, but we believe that it is the only logical explanation of certain cases of dysmenorrhea observed in patients in whom the assumption of a psychogenic factor would be far-fetched, and in whom no constitutional or other such predisposing factor can be demonstrated.

At any rate—and this is the chief motif of this paper—we believe we have offered evidence to indicate that the immediate cause of the dysmenorrhea is the exaggerated and painful contractility of the uterine musculature, a factor which hitherto had been only conjectured. There are, of course, many other related questions which come up for consideration. One which at once occurred to us in the early part of this work was the apparent paradox noted in cases of functional hemorrhage, which is believed to be associated with an excess of female sex hormone, but in which pain is practically never a symptom. As opposed to the conditions in the normal cycle, there is a steady increase in the blood content of the female sex hormone up to the usual menstrual date, without the inhibitory influence on uterine motility normally exerted in the premenstrual stage by the corpus luteum, for the latter is lacking in cases of functional bleeding. Whether it is the rather abrupt withdrawal of the progestin influence rather than mere female sex hormone activity which is responsible in some cases for pain cannot be definitely stated, though it seems possible.

Another possible factor may be associated with the underlying rôle which many now believe is played by the anterior pituitary lobe in the production of functional hemorrhage. If this view is correct, it may be that the pituitary sex hormones may inhibit the motility-increasing effect which one might otherwise expect from the excessive amount of female sex hormone. This aspect of the general problem, however, calls for further experimental investigation. It is obviously bound up with the still debated question as to the unity or duality of the anterior pituitary sex principles.

Still another aspect of the general question is as to why primary dysmenorrhea so commonly disappears after pregnancy. A natural assumption would be that the changed texture of the uterus after pregnancy might explain the disappearance of the pain. That this is not invariably the case and that the recurrence of the necessary factors may again cause dysmenorrhea, without anatomic basis, even in parous women, is well known to every gynecologist. It seems to us, also, that the presence of large amounts of female sex hormone in the blood of recently delivered women may offer a logical explanation, in part at least, for the occurrence of after-pains.

It is not the aim of this paper to discuss the treatment of dysmenorrhea. Almost as a corollary of the physiologic principles that have been presented, however, it would seem that a part of the treatment of the immediate attacks should consist of the administration of substances to inhibit the spasmodic and painful uterine contractility. Many drugs have been used for this purpose, atropine especially being of frequent value (Novak [2]).

The biologic "antidote" to female sex hormone from this standpoint, as one might almost call it, is either progestin or a prolan-containing substance prepared from the urine of pregnant women, on the direct basis of laboratory investigations. The former of these is not available for human administration, but the latter is. We have therefore used this material clinically, in the form of a commercial preparation of urine of pregnant women. It is too soon, of course, to speak of results, except to say that they are encouraging.

It cannot be too strongly emphasized that such a plan is only a part of the treatment of dysmenorrhea. The intelligent treatment of this disorder must include a thorough study which can never be restricted to the pelvis alone and which may carry the physician far afield into the domains of internal medicine, endocrinology, psychiatry and other branches of clinical investigation.

SUMMARY

Many theories have been offered to explain the etiology of primary dysmenorrhea, and many plans of treatment have been suggested. None has seemed adequate, although the importance of psychogenic, constitutional and other such factors in the causation of many cases is undoubted. The immediate cause of the pain, on the basis of the physiologic studies reported in this paper, is almost surely a disturbance of the normal motility factors of the uterine muscle. In general, female sex hormone or theelin is an excitant and progestin an inhibitor of this motility. Preparations of the urine of pregnant women, presumably because of their prolan content, likewise are strongly inhibitory.

The inhibitory influence of progestin on uterine motility is removed a day or two before the menstrual onset, and the withdrawal of this restraining factor produces dysmenorrhea in some women, possibly those with such predisposing factors as constitutional subnormality or psychoneuroses. In other cases it would seem that there is an actual imbalance between the theelin and progestin, either quantitative or chronological, or both.

ABSTRACT OF DISCUSSION

DR. C. J. MILLER, New Orleans: Dysmenorrhea, like the toxemia of pregnancy, has been called a disease of theories, and the trouble with most theories about it is that they utterly lack proof. The new theory of dysmenorrhea that has just been presented is one that has a substantial background of proof. It cannot be accepted unreservedly as yet (I think Drs. Novak and Reynolds themselves are still skeptical in some regards) but it holds out more hope for the future control of this condition than any idea that has yet been advanced. Dysmenorrhea has many aspects. It was once attributed to the foolish way in which women lived and dressed, but among modern athletic women it is still found frequently, and one must obviously look elsewhere for its origin. I am rather surprised to find so many of the German gynecologists accepting unreservedly a psychogenic origin. I wonder whether that is not just a simple and easy way of getting rid of a nuisance. Certainly one should be extremely careful in assigning to this origin the average case of dysmenorrhea. I prefer to remember Lord Moynihan's warning that neurosis is frequently just another way of saying "I don't know." The clinical study of dysmenorrhea has been in the past much hampered by the "shotgun medication" with which it has been entangled. Ovarian extract has never in my experience achieved anything, and I have never been able to understand the physicians who continued to use it extensively and expensively. Within the last two years, however, the isolation of the various hormones of the ovary and of the anterior pituitary body has given something definite to work with and for, and this theory of dysmenorrhea gives, it is to be hoped, a logical basis for glandular therapy. The value of thyroid extract in the selected case of dysmenorrhea can no longer be questioned, and my theory, though I cannot prove it, is that all the glands of internal secretion play their part in the female menstrual cycle and bear a distinct relation also to the nervous and emotional constitution. The relation of the emotions to the suprarenal has recently been proved, and gynecologists have repeatedly seen menstruation stopped permanently by some shock. Could not the suprarenal be the important factor? I should like to ask whether the influence of endocrine therapy in dys-

menorrhea in reducing the contractibility of the uterus is any thing more than the effect to be secured from small doses of bromides and similar agents. I am not saying this in a spirit of skepticism, but progestin is not yet available, and all ovarian and pituitary extracts are still too expensive to be advised for general use, so that the thing to do is to secure such results as one can by more practical methods. Dysmenorrhea was treated empirically in the past because its origin was not known. Now that increased activity of the uterus, which itself is the result of endocrine activity, has been pointed out as the immediate cause of menstrual pain, one is in a position to attack the cause primarily.

DR. J. P. PRATT, Detroit: The helpful and interesting paper of Drs. Novak and Reynolds offers a sound classification of the various theories that have been proposed to explain the cause of dysmenorrhea. Their new theory is plausible, but some difficulty may be experienced in attempting to separate theory from fact. Although theories are useful for progress, to accept them as factual before they are proved is misleading. To what extent is the inference that progestin is formed by the human ovary supported by fact? It is well established that ovarian follicular hormone may be obtained from the human ovary, not only from the follicles but also from the corpus luteum. The same hormone has not been found in the corpus luteum of all animals. The anterior-lobe-like hormone has been found in the urine during pregnancy in women and a few species of animals, but it is not present in the urine of many species. Progestin obtained from corpora lutea of pigs has a specific action on rabbits but, up to the present, it has not been obtained from human corpora lutea nor has it been available for use in human subjects. Since there are such wide differences in the reactions of different species of animals to the various hormones, does the evidence justify the assumption that progestin is an active factor in the human cycles?

DR. EMIL NOVAK, Baltimore: The theory which we have suggested to explain the mechanism of primary dysmenorrhea is based on the physiologic considerations we have set forth, and hence seems to us highly rational. With reference to Dr. Pratt's query as to the rôle of progestin in the human being, we have in our paper referred to the work of Knaus along this line, as well as to numerous investigations on numerous other species. The effects of these hormones on uterine motility can therefore scarcely be considered as a species characteristic of the rabbit. Reference has been made to the possibility that other organ extracts, such as those of the thyroid or suprarenal, might perhaps produce effects on the uterine muscle similar to those produced by the sex hormones, but this is not borne out by the experimental studies of Reynolds and others. Dr. Miller has in his discussion lamented the disappointing results of the various plans of treatment that have from time to time been suggested for dysmenorrhea, and all gynecologists are willing to lament with him. There is all the more reason, therefore, to begin a scientific study of this problem, for this has certainly not been done in the past. Our study is an effort to apply the growing knowledge of reproductive physiology to this old clinical problem. For the present we are more concerned with the pathologic physiology than with the therapeutics of dysmenorrhea, although it does seem that progestin or the more readily available anterior pituitary luteinizing principles may, as "biologic antispasmodics," prove to be of auxiliary value in treating primary dysmenorrhea.

Iodine Content of Blood.—Since the original announcement by Gley and Bourcet in 1900 of their discovery that iodine is a constant and normal constituent of blood, attempts have been made repeatedly to establish a connection between diseases of the thyroid gland and variations in the blood iodine content. This problem has been surrounded with the greatest difficulties owing to complications in the analytical methods. The amount of iodine present in the blood under normal conditions is very small indeed, and hence investigators were hampered both by having to use complicated micromethods and by being compelled to use relatively large quantities of blood.—Dodds, E. C.; Lawson, William, and Robertson, J. D.: Variations in the Iodine Content of the Blood in Hyperthyroidism and Nontoxic Goiter, *Brit. M. J.*, Sept. 17, 1932, page 608.

RAYNAUD'S DISEASE

A CLINICAL STUDY OF ONE HUNDRED AND FORTY-SEVEN CASES

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AND
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The confusion in diagnosis which even a cursory survey of the literature on Raynaud's disease shows to exist seems to have a single basis: departure from the criteria stated by Raynaud.[1] These criteria are: (1) intermittent attacks of changes of color of the acral parts; (2) symmetrical or bilateral involvement; (3) absence of clinical evidence of occlusive lesions of the peripheral arteries, and (4) gangrene or trophic changes, if present, limited in large degree to the skin. To these four criteria laid down by Raynaud we have added a fifth and a sixth: (5) the disease must have been present for a minimal period of two years, and (6) there must be no evidence of disease to which it could be secondary. These additional criteria we have found necessary to exclude the secondary type of vasomotor disturbance. Early in the course of organic disturbance, the vasomotor manifestations may be the only evidence of disease; within a period of two years the organic changes, if present, should be obvious. Twenty-five of Raynaud's 31 cases cannot be accepted as illustrative of the condition described by him;[2] they do not fulfil the minimal requirements. This is usual with eponymic diseases described many years ago and does not detract from the greatness of Raynaud.

The title of Raynaud's first paper, "L'asphyxie et de la gangrène symétrique" is misleading; it intimates that gangrene is always present. Raynaud later attempted correction of this error, for in 1874 he wrote: "May I now be allowed to criticise the name which I gave the disease . . . local asphyxia and symmetrical gangrene are not two distinct maladies but two degrees of the same malady, the second is often absent."[2]

The term "gangrene" is also misleading, ordinarily recalling the extensive gangrene seen in cases of thrombo-angiitis obliterans or peripheral arteriosclerosis with occlusion of the arteries. Such degrees of massive gangrene are not seen in Raynaud's disease. Raynaud himself stated: " . . . the small ulcer cicatrizes and contracts and there results a kind of a conical tubercle immediately subadjacent to the nail. Finally we see gangrenous points appear on the extremities which may occupy the superficial layers of the skin from the extent of a pin's head up to the end of the finger, rarely more."[2]

Pain has also been unduly emphasized in Raynaud's disease; it is ordinarily of no significance. When the complications of this condition are absent, that is, scleroderma, ulcers or arthritis, distress occurs only with the episodes of discoloration. Even when secondary changes are present the distress is ordinarily mild, sharply distinguishing this condition from thrombo-angiitis obliterans with gangrene. The explanation of

From the Division of Medicine, the Mayo Clinic.
Read before the Section on Nervous and Mental Diseases at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

1. Raynaud, A. G. M.: De l'asphyxie locale et de la gangrène symétrique des extrémités, Paris, Rignoux, 1862.
2. Allen, E. V., and Brown, G. E.: Raynaud's Disease: A Critical Review of Minimal Requisites for Diagnosis, Am. J. M. Sc. **183**: 187-200 (Feb.) 1932.

an unusual degree of pain ordinarily lies in the patient's increased sensitivity to painful stimuli, as shown by the Libman test. Any supposed example of Raynaud's disease presenting pain as the major symptom must be viewed with the suspicion that the diagnosis is incorrect.

PATHOGENESIS

Raynaud's opinion of the mechanism of production of the disease was clearly stated: "To sum up in more definite form, I would say that in the present state of our knowledge local asphyxia of the extremities ought to be considered as a neurosis, characterized by enormous exaggeration of the excito-motor energy of the gray parts of the spinal cord which control the vasomotor innervation." [3]

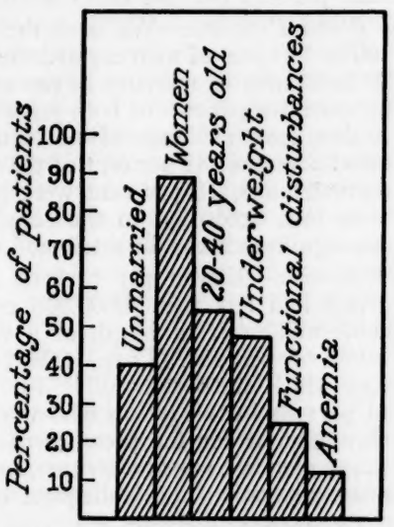

Chart 1.—Etiologic factors in Raynaud's disease.

The exact antithesis of Raynaud's opinion has been more recently stated by Lewis: [4] "The primary cause of spasm of the digital vessels in Raynaud's disease of the common type is not an abnormal vasomotor impulse but a local fault of the vessels."

The question that needs to be answered is, Can vasomotor activity be induced in the digits after complete removal of sympathetic control of the arterioles? Lewis answered in the affirmative; the 2 cases he used for investigation were far advanced and complicated with trophic lesions. Simpson, Brown and Adson [5] answered in the negative when testing persons with uncomplicated Raynaud's disease. We must conclude from these experiments that uncomplicated Raynaud's disease is due to hyperactivity of vasomotor innervation; "local fault" of the digital arteries is an added factor in advanced cases.

PHYSIOLOGY

The various colors of the skin of acral parts are explained by observation of the blood vascular structures of the nail fold. During the phase of pallor, the capillary loops are constricted and incompletely filled, and many are invisible; the blood is not flowing. When cyanosis supervenes the capillary loops have gradually dilated and an increased number is visible; the contained blood is blue and the flow is intermittent. The surface temperature is low. If recovery is excessive, rubor is present. The surface temperature is high, the flow of blood in the capillaries is rapid, and the color of the blood is red. The capillary blood pressure falls below normal during the stage of pallor and increases to above normal during the reactionary rubor.[6]

BASIS OF STUDY

In the period from January, 1920, to July, 1931, a diagnosis of Raynaud's disease was made 265 times at the Mayo Clinic. Close examination of the records of the patients caused us to exclude 61 of them on the basis of atypical symptoms, inadequate data, evidence suggesting occlusive arterial disease or evidence of primary organic disease of various systems, with secondary vasomotor changes. The remaining 204 cases were grouped as follows: group 1, uncomplicated type, 147 cases; group 2, the type with scleroderma or arthritis, 51 cases,[7] and group 3, the type with trophic changes or recurrent infections unassociated with scleroderma or arthritis, 6 cases.

The present study deals solely with the group of cases of uncomplicated Raynaud's disease, as they represent the purest type of disturbance.

ETIOLOGY

Sex.—Of the 147 patients included in this study, 17 (11 per cent [8]) were males (chart 1). Just what causes the predilection of the disease for girls and women remains unsettled. Such questions are common in medicine: Cholecystic diseases affect females more commonly than males; peptic ulcer, thrombo-angiitis obliterans, angina pectoris and arteriosclerotic disease affect males more frequently than females. The obvious explanation in the case of Raynaud's disease is that the physiology of the reproductive system is more elaborate in the female. Ovarian and related functions doubtless play a part, for the onset of the condition was before the age of 10 years in only 2 cases and after that of 60 years in only 1 case. Castration of the female does not seem to influence the course of the disease, for in several of our cases the symptoms began after normal menopause or after artificially induced menopause. Certainly women are more prone to psychic disturbance and to psychoneurosis involving the gastro-intestinal, cardiac and muscular systems. Perhaps the matter would be clarified if one assumed the factors responsible for the predominance of Raynaud's disease in the female to be the same as those responsible for the greater incidence of psychoneurosis and other functional disturbances.

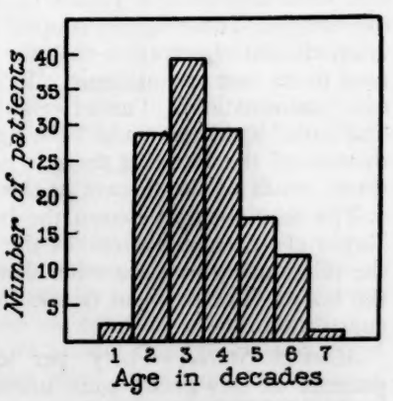

Chart 2.—Age of the patients when the symptoms of Raynaud's disease began.

Age.—The third decade of life is predominantly the age at which symptoms begin. The other decades, grouped in order of frequency of onset of symptoms, are the fourth, second, fifth, sixth, first and seventh, respectively (chart 2).

The basis of predilection of the disease for younger persons seems intimately linked with the nervous instability of patients of these ages. The second decade of life introduces a remarkable complexity of situations

3. Simpson, S. L.; Brown, G. E., and Adson, A. W.: Raynaud's Disease: Evidence That It Is a Type of Vasomotor Neurosis, Arch. Neurol. & Psychiat. **26**: 687-718 (Oct.) 1931. Raynaud (footnote 1).
4. Lewis, Thomas: Experiments Relating to the Peripheral Mechanism Involved in Spasmodic Arrest of the Circulation in the Fingers, a Variety of Raynaud's Disease, Heart **15**: 7-100 (Aug. 3) 1929.
5. Simpson, Brown and Adson (footnote 3, first reference).
6. Landis, E. M.: Micro-Injection Studies of Capillary Blood Pressure in Raynaud's Disease, Heart **15**: 247-255 (Dec. 12) 1930.
7. Frequently scleroderma and arthritis afflict the same patient. In 32 cases the scleroderma was more advanced; in 19 cases arthritis was of paramount importance. Trophic changes are frequently associated with scleroderma.
8. Allen, E. V., and Brown, G. E.: Raynaud's Disease Affecting Men, Ann. Int. Med. **5**: 1384-1386 (May) 1932.

to play on that complicated structure which is designated so simply "the nervous system." Sexual development and physical metamorphosis take place. School takes the child away from the protected environment of the home, and he or she becomes aware of the dual nature of sex. This period of development is almost invariably associated with a free attack on the preceding more or less constant emotional level, so that the emotional status becomes a greatly varying one. The third decade brings marriage to some and spinsterhood or bachelorhood to others, but problems of marriage to both. The bachelor girl achieves economic independence, but never social equality with her married sister; in a game for twosomes she plays alone. The bride is subjected to emotional strains of marital life, pregnancy and childbirth. The man faces economic problems and the necessity for making important decisions. As functional nervous disturbances decrease beginning with the fourth decade, so also does the incidence of Raynaud's disease.

Nationality.—Notation regarding nationality had been made in 119 cases. Forty-nine of the patients were listed as "American"; 11 as German; 10 as Jewish; 11 as English; 8 as Norwegian, and from 1 to 5 as Polish, Swedish, Austrian, Canadian, Lithuanian, Welsh, Danish, Bohemian, French, Finnish or Italian. It appears from these figures that nationality plays no part in the etiology of Raynaud's disease.

Body Type.—We used the height and age of each of our patients to calculate expected weight on the basis of standard tables. If the expected weight exceeded the actual weight of the patient by 10 pounds (4.5 Kg.) or more, the designation "underweight" was given; when the reverse was true, the patient was considered "overweight." If the actual weight was within plus or minus 10 pounds of the accepted norm, the weight of the patient was considered normal. Data were available regarding 126 cases. According to our grouping, 37 per cent of the group were of normal weight; 48 per cent were underweight (chart 1), and 15 per cent were overweight. These figures support an impression gained from clinical observation that the majority of patients tend to be thin and asthenic. In many cases notations of "malnutrition," "underweight," "emaciation" or "asthenia" had been made. The figures seem significant in view of the fact that there is no loss of weight as a direct result of the disease in this stage.

The relationship between the build of the body and Raynaud's disease constitutes the same puzzle as does the relationship between other diseases and the build of the body. The problem is one for students of human constitution.

Marital States.—Forty per cent of the women patients of this group were unmarried (chart 1). A study of 5,819 unselected records of women patients between the ages of 20 and 60 years showed that 32 per cent were single. Age naturally has a large influence on the marital state. Of the female patients with Raynaud's disease and of those of the control group, studied by ages, the following respective percentages were unmarried: third decade, 82 per cent of 29 patients and 55 per cent of 1,200 patients; fourth decade, 15 per cent of 39 patients and 21 per cent of 1,600 patients; fifth decade, 20 per cent of 25 patients and 17 per cent of 1,600 patients, and sixth decade, 15 per cent of 20 patients and 15 per cent of 1,100 patients.

The close correlation in percentage of unmarried patients of the two groups in the fourth, fifth and sixth decades of life indicates that marital status is of no significance in these groups unless the onset of symptoms of Raynaud's disease can be shown before marriage of the patients. In the majority of the married patients the symptoms began after marriage. The high percentage of single women in the third decade of life may be of some significance in the etiology of Raynaud's disease. Our data also indicate that Raynaud's disease acquired before marriage is not significantly influenced by a change of marital status. Eight of the male patients (47 per cent) were unmarried.

Blood Pressure.—We used the systolic range from 100 to 140 mm. of mercury and the diastolic range from 70 to 80 mm. of mercury as representing normal blood pressure for patients of both sexes and of all ages. Our studies gave evidence of no significant alteration of blood pressure; 81 per cent of the readings were within normal limits, 15 per cent were high, and 4 per cent were low, according to the standard values adopted. No significance can be attributed to these figures.

Anemia.—Eleven per cent of the patients of this group had less than 4,000,000 erythrocytes for each cubic millimeter of blood, or a value for hemoglobin below 65 per cent (Dare) (chart 1). The same factors which were responsible for the high percentage of persons in this group who were underweight probably account for the presence of the anemia, namely, faulty diets with undernutrition, indoor existence, inadequate relaxation and inadequate outdoor exercise.

Occupations.—Forty per cent of the unmarried women subjects were teachers, exceeding by 7 per cent the total number of women who gave their occupation as stenographers, bookkeepers, clerks and office workers. There were also 3 students, 2 nurses and 1 physician. Twenty-five per cent of a control group of 1,200 unmarried women patients between the ages of 20 and 50 years were teachers. Of 400 unselected women patients in the third decade of life, 35 per cent were teachers.

Husbands of the patients held a great variety of positions, varying from meat packer and miner to attorney and physician. Forty-eight per cent had "white collar" jobs, including that of florist, cafe owner, insurance salesman, minister or merchant, whereas 52 per cent were farmers, butchers, blacksmiths, metal workers or laborers. Five of the husbands were physicians, a number which seems unusually high unless it is remembered that recent advances in the treatment of Raynaud's disease would serve to attract the attention of physicians whose wives had the malady. There was a wide range of occupation among the male patients: business executive, salesman, teacher, laborer and prospector.

Menstruation.—Data were available regarding 92 of the cases in this group. Normality was noted as regards the age of onset, regularity, amount of flow and associated pain in 75 cases (82 per cent). Irregularity was noted in 17 cases (18 per cent). The usual variation in the intermenstrual period was from three to six weeks, but periods of amenorrhea of as long as one year were noted. Late onset was noted by 3 of the patients who had irregular menses. Two of the women began to menstruate at 17 years of age, and one patient began when 21 years of age. Menorrhagia was noted in 5 instances. Excessive dysmenorrhea was noted only occasionally.

From this study it seems apparent that menstrual disorders play little if any part in the pathogenesis of

Raynaud's disease. A large group of women of comparable ages seen in general practice for various complaints would, quite likely, give histories of menstrual disturbances in as large a percentage of the total cases as the women with Raynaud's disease. The association of Raynaud's disease and menstrual disorders has been mentioned in medical literature. Our data would indicate that perpetuation of the idea that there is such an association is unwarranted.

CLINICAL COURSE

All cases of Raynaud's disease begin in a uniform manner, that is, with recurrent episodes of discoloration of the digits and intervening periods of entirely normal color. They may then follow a course of slow or rapid progression, may remain stationary or may improve. In the cases characterized by progression, complications of the disease develop (scleroderma, arthritis, recurrent infections, gangrene) in from one to fifteen years. In such cases there is an increase in the number of episodes of discoloration; the episodes last longer and disappear less completely, until cyanosis may be more or less constant. The condition of the majority of the remaining patients continues fundamentally unchanged for many years; sometimes improvement is noted.

Duration of Symptoms Prior to Observation.—The length of time that elapses between the onset of the illness and the examination of the patient attests to the mildness of the uncomplicated form of the disease. We were able to obtain data concerning this interval from the records of 135 patients. The majority of these saw fit to consult us in the first, second, third or fourth years of their illness. However, 41 per cent, or 56 of their number, consulted physicians of the Mayo Clinic more than five years after the onset of the disease (chart 3). Perhaps many of this group had consulted physicians prior to their examination at the clinic, but since medical treatment is largely without value, one may assume that the complaint was not severe enough to cause the patient to seek aid in a large medical center.

The persistence of unchanged symptoms for as long as thirty years and the persistent mildness of the condition demonstrate the utter benignity of the disease in many instances. Again, the parallelism that exists between psychoneurosis, other functional disturbances and Raynaud's disease is striking. Organic disease in general, if it maintains activity for such long periods, becomes detrimental to the health and well-being of the subject with almost uniform regularity. Chronicity and the lack of progression stamp the various forms of psychoneurosis and Raynaud's disease, alike, as examples of functional disturbances.

Regions Involved.—Data regarding the regions involved were available in 90 per cent of the cases in this group. Notation was made of involvement of both hands and feet in 47 per cent of the cases, and in an equal percentage the hands were said to be involved alone. These figures are probably not entirely reliable. Unless one queries patients specifically regarding disease of the peripheral parts, the data obtained are fragmentary. Involvement of the hands is obvious to the patient because of the full exposure of them to fluctuations in temperature and because he sees them easily. Conversely, inclusion of the toes in the vasomotor changes may fail to attract the attention of the patient, because these changes are mild, owing to protection by clothing and because they are not visible for the same reason. If all patients were specifically questioned, it is probable that in almost every instance in which involvement of the hands was of moderate duration, there would be evidence of inclusion of the toes in the same process.

Many of the patients are afflicted early in the disease with vasomotor changes which involve only one or two digits of one side. Frequently, all digits of both sides (thumbs excepted) are included in the process simultaneously. The digits are frequently not uniformly included in the process; the extent of the vasomotor changes varies widely. Most commonly the terminal phalangeal portions are involved, but the entire digits may be affected. Some persons state that the entire hand, to the wrist, may be discolored, but we have never seen this when the pallor has been experimentally induced. Equally extensive involvement of all digits during an episode is frequently absent. In many instances the vasomotor changes are mild; pallor is most common, representing the simplest phase. Cyanosis is the next most common coloration, occurring usually following pallor, but occasionally alone. Rubor is least common. The various colors of the involved parts do not uniformly follow one another with precision. Pallor may be transformed into cyanosis in an irregular, patchy manner, and may give way to rubor while pallor is still present in other acral parts. Occasionally, when these discolorations are provoked for study, one may see all phases at the same time, pallor, cyanosis and rubor on the digits of a single extremity. The digits uniformly appear normal between the episodes of discoloration in the early stage before permanent changes have occurred.

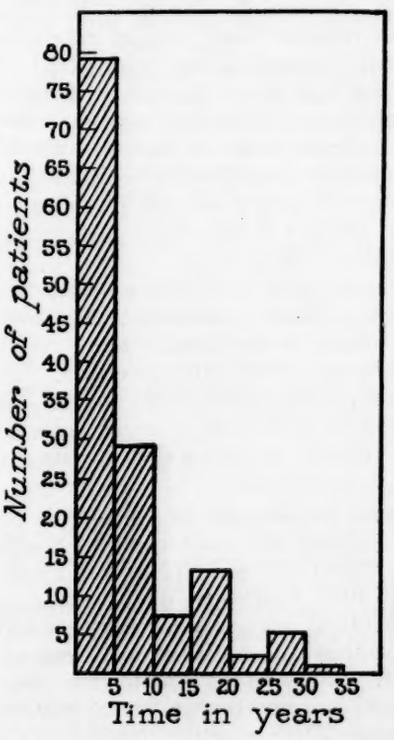

Chart 3.—Time elapsing between the onset of symptoms and consultation.

Involvement of other acral parts, such as the nose, cheeks, ears and chin, was not common in this group of cases. The ears were involved in a few cases, and in 1 instance the tongue was affected. One of the patients in this group of 147 cases had attacks of blindness suggestive of intermittent spasm of the retinal arteries.

Factors Precipitating Episodes of Change in Color.—Lowered environmental temperature almost uniformly induces episodes of change in color. This phenomenon is so constant that application of cold serves as a reliable method for inducing these changes experimentally for study. Generalized exposure of the body to lowered temperature is more important than exposure of the digits alone in the production of episodes of discolora-

tion. Changes in the color of the digits may occur without physical stimulus, particularly if subjects are under emotional stress. They are more likely to occur when the subject is tired out or nervously exhausted. The discoloration may be noted as well in association with episodes of emotional expression: anger, fear, weeping and so forth. The mechanism, as far as is known, represents heightened susceptibility to the stimuli of cold and emotion.

The degree of coldness necessary to induce changes in color varied greatly. In some cases the slightly lowered temperature of a spring or autumn morning or evening, the touching of cold silverware or rising after sleeping in a cool room was adequate. Even the handling of glassware containing iced drinks or the ingestion of cold drinks or ice cream was enough to initiate the display of colors. Bathing in cool water may leave the parts temporarily discolored. One patient stated that micturition provoked discoloration. In other cases the acral parts retained their normal reactions until they were partially exposed to the vicious cold of northern midwinter, but such minor degrees of heightened susceptibility are rare. There are patients who experience changes in color even in the warmth of summer and without any precipitating episodes of emotional strain. Progress of the disease is indicated in any instance in which progressively decreasing degrees of coldness induce attacks.

Changes in color may occur from one to ten times daily, under the most variable conditions. In a considerable number of instances the disease seems to be initiated by an operation, childbirth, infections (as influenza) or the death or illness of a loved one. These factors could doubtless be elicited in a larger percentage of cases if the patients were queried specifically regarding this.

Associated Diseases.—In addition to a diagnosis of Raynaud's disease, diagnosis of other conditions was made in 107 cases. Thirty-six patients of the group were suffering from such functional disturbances as chronic exhaustion, neurosis, excessive nervousness and hysteria, or were victims of constitutional biologic inferiority (chart 1). Other diseases that were diagnosed appear to be of no significance in association with Raynaud's disease.

The high incidence of associated evidence of nervous instability (24 per cent in this series of cases) is significant. It is probable that the percentage indicated would be much higher were this specific point kept in mind during questioning of patients with Raynaud's disease. Certainly one is impressed with the fact, as patients with Raynaud's disease are examined, that chronic exhaustion, insomnia, nervousness, vague aches and pains, constipation and headaches are frequently complained of. These and Raynaud's disease, in the majority of cases, indicate a broad type of inferiority.

TREATMENT

References are made in the literature to a wide variety of treatments for Raynaud's disease. Glandular extracts are frequently mentioned, but there is no good evidence that they are of more than minimal benefit. Roentgen therapy, with the intention of influencing the sympathetic nervous system, is said to be beneficial; in our experience the results have been so slight as to make us question the value of such treatment. Residence in a warm climate and freedom from nervous and mental strain may cause amelioration of symptoms in cases uncomplicated by scleroderma, other trophic changes or recurring infections. The types of treatment just mentioned and various others mentioned in the literature are at best inadequate.

Surgical attack on the sympathetic nervous system is, in our experience, the most satisfactory method of treatment of Raynaud's disease.[9] Selection of cases for operation depends largely on the clinical syndrome presented. Patients with the uncomplicated forms of the disease, that is, with recurrent episodes of discoloration of the digits, are selected for operation if the disease appears to be progressing or if annoyance from the condition warrants it. Occasionally operation may be recommended as a prophylactic procedure, for the results are excellent and complications which might ordinarily occur later are avoided. In this series of 147 cases of uncomplicated Raynaud's disease, operation on the sympathetic nervous system was performed in 17, an incidence of 12 per cent. This appears to us to represent extreme conservatism. The results of a thoroughly executed operation in this type of the disease may be indicated by the word "cure."

When scleroderma, chronic discoloration of the digits, recurrent infections or trophic changes are present, operation on the sympathetic nervous system is advisable if sufficient available vasodilatation can be demonstrated before operation, for no other method of treatment of value is known to us. Thirty-eight such cases have been seen by us and operation was performed in 21, an incidence of 55 per cent. This percentage appears to us to be too low, but is due in part to refusal of operation by some of the patients. The results in this type of case are not as striking as in the uncomplicated cases, apparently because the disease in this stage is not due to a fault of vasomotor innervation alone; organic changes, partially or largely irreversible, are present. However, cessation of distress and infections, improvement in the color of the digits and softening of the sclerodermic skin are observed.

The vasomotor changes associated with arthritis are usually mild and entirely relieved by operation. In these cases, operation is done largely to relieve the arthritis. In 3 of the 19 cases comprising this group (16 per cent) sympathetic ganglionectomy was performed. The effect on the arthritis is outside the scope of this paper and has been considered elsewhere.[10]

SUMMARY

The requirements for the diagnosis of Raynaud's disease are: (1) intermittent attacks of discoloration of the acral parts; (2) symmetrical or bilateral involvement; (3) absence of clinical evidence of occlusive lesions of the peripheral arteries; (4) gangrene or trophic changes, when present, limited in a large degree to the skin; (5) two years as a minimal period of duration; (6) absence of organic disease to which the vasomotor changes might be secondary, and (7) the predilection of the disease for females.

Two hundred and four cases of Raynaud's disease were observed at the Mayo Clinic between January, 1920, and July, 1931. These were grouped as follows: uncomplicated, 147 cases; with scleroderma and arthritis and with or without gangrene or recurrent

9. Adson, A. W., and Brown, G. E.: The Treatment of Raynaud's Disease by Resection of the Upper Thoracic and Lumbar Sympathetic Ganglia and Trunks, Surg., Gynec. & Obst. **48**: 577-603 (May) 1929.

10. Hench, P. S., and Craig, W. McK.: Sympathetic Ganglionectomy and Ramisectomy for Chronic Infectious Arthritis: Clinical Interpretation, South. M. J. **24**: 636-645 (July) 1931.

infections, 51 cases, and with gangrene or recurrent infections unassociated with scleroderma or arthritis, 6 cases.

Study of 147 cases of Raynaud's disease of the uncomplicated type indicates that the disease is ordinarily an equivalent of psychoneurosis or neurasthenia.

Operation on the sympathetic nervous system is the best method of treatment, offering a cure in the uncomplicated type of case.

ABSTRACT OF DISCUSSION

DR. W. J. MERLE SCOTT, Rochester, N. Y.: The authors have presented an analysis of a large series of patients with Raynaud's disease. On the basis of this study they have advanced an hypothesis of it etiologically as a single disease entity in correspondence with Raynaud's conception. This suggestion is attractive for its simplification of a rather complex problem. How well is it borne out by ascertainable facts? Vasoconstrictive impulses often initiate the attacks in Raynaud's disease. Two illustrations of this will suffice. The first shows a definite area of ischemia in the thumb of a patient resulting from a momentary pain from having the posterior tibial nerve pierced with a hypodermic needle. This attack was similar to attacks the patient had spontaneously, and the case was a typical one of Raynaud's disease. The second was a patient chosen to demonstrate a typical Raynaud's attack during students' rounds, as the patient had shown several characteristic attacks previously. The patient was a man, a rather unusual thing, but having a typical story of Raynaud's disease over a period of about ten years, and no evidence of any arterial occlusion at any point. I had had him out on the porch about half an hour previously in a cool environment. But when we came to see him he did not show manifestations of the disease. Within two minutes from the time the group came around and we began discussing his case, he had a typical ischemic attack. Certainly there was a definite correlation between his mental state and that attack. This patient recounted how a sudden psychic stimulation at home, such as an unexpected telephone call, would initiate an attack before he could cross the room. The importance of such reflex or psychic stimuli in precipitating typical attacks of the disease fits in with the authors' hypothesis. However, in a certain group of these cases complete anesthesia of an area does not overcome the ischemia, which is promptly relieved when the area is immersed in warm water. I believe that Raynaud's syndrome is not a single disease entity but is rather a type of response by the peripheral arteries. Vasoconstrictor impulses and peripheral hypersensitiveness to cold contribute to the development of such attacks, for different cases in varying proportions.

DR. WILLIAM J. KERR, San Francisco: This syndrome was described by Raynaud himself. Little has been added to the subject since his time excepting in one particular feature. The authors mentioned the pallor which is described by patients and which is seen by the physician during attacks. I feel that the pallor is a purely artificial phenomenon. It depends on how much blood there is in the periphery at the time the patient notices it or when the physician sees the patient during an attack. If the attack comes on when the vessels are nearly empty, the cyanosis will be slight, almost yellowish white, and yet there is an element of cyanosis in it. If the attack comes on during the time when the vessels are filled with blood, there will be an intense cyanotic tint. A picture similar to Raynaud's syndrome is seen in a variety of conditions, first in those in which the arteries are restricted by some organic disease, whether embolism, thrombosis, or obstruction for any other reason. Then the parts affected by the obstruction of the vessel may show a symptom complex which is quite similar to Raynaud's syndrome. In Raynaud's syndrome there is a symmetrical bilateral asphyxia with local necrosis, not always going on to marked gangrene, but a progressive state leading up to local loss of tissue. The vessels are not immediately changed structurally but may show obliteration in the terminal stages. It is possible to demonstrate by the use of heat that the vessels are capable of opening up to their full capacity, except in the late stages when local changes have occurred in the periphery. The same changes are seen in the skin and other parts in which the circulation is impaired and nutrition is disturbed. There is no evidence that the vasomotor or vasoconstrictor influences from the central nervous system are any greater in Raynaud's syndrome than in normal states. There may be an analogy of the control of the heart through the vagus to that seen in the normal autonomic nervous system. There is constant tone of the vessels, maintained apparently through the vasoconstrictor and vasodilator influences, but there seems to be another mechanism, which is entirely local, perhaps communicating with the central mechanism but one which is capable of independent action. The chief fault in this syndrome seems to lie in the local mechanism that may reside in the rich plexus of nerves which lie in and about the blood vessels. There is no doubt in my mind that removal of the vasoconstrictor tone, which is of central origin, will cause the peripheral vessels to remain in a more permanent state of dilatation than they would in the normal individual. In such a manner one may improve the circulation to the periphery. What I am saying is not in condemnation of surgical intervention, but I feel that one is not getting to the root of the problem when one simply removes these tonic influences. I should like to inquire from the authors what proof they have that the patients they have operated on are permanently cured.

DR. ARTHUR W. ALLEN, Boston: I wish to report briefly the surgical results I have had in vasomotor imbalance. In eleven patients in whom a diagnosis was made of primary vasomotor imbalance or true Raynaud's disease of a severe grade, sympathetic neurectomy was performed as advocated by Adson. All the patients whose cases have been reported here were operated on more than a year ago. All of them have had immediately after the operation, as far as could be told by sweating tests, complete obliteration of the vasomotor influence. In the eleven patients, fifteen cervicodorsal ganglionectomies and eight lumbar ganglionectomies were done. Anywhere from four to eight months after operation, vasomotor influence returned in the cervicodorsal cases eleven times out of fifteen; very discouraging results. None of the patients with lumbar ganglionectomy had a return of the vasomotor influence. In the secondary vasomotor group, some fall into the authors' classification, but I have divided them in a little different way. They are cases of scleroderma, some with arthritis, some with posttraumatic trophoneurosis, and some followed local infection of the digits. In this group were ten patients considered to be in a sufficiently severe condition to undergo this operation. Nine had cervicodorsal ganglionectomies and five had lumbar ganglionectomies, fourteen in all. Vasomotor influence returned in three of the cervicodorsal cases out of nine. In other words, in that group the return of vasomotor influence seems to be less liable to take place than in primary vasomotor disease. In the two groups combined, there were thirty-seven sympathetic neurectomies in twenty-one patients. The cervicodorsal operation was done in twenty-four, with a return of vasomotor influence in fourteen. None of the thirteen patients with lumbar sympathetic neurectomies had any return of vasomotor influence.

DR. EDGAR V. ALLEN, Rochester, Minn.: The mere fact that anesthesia is produced in the fifth digit is not conclusive evidence that the sympathetic fibers to the fifth digit have been temporarily put out of function. Our experience at the Mayo Clinic is that there is no evidence of further vasomotor function if the sympathetic nerve fibers are blocked by the injection of an anesthetic at the base of the finger in a case of uncomplicated Raynaud's disease. This is an important observation in determining whether or not uncomplicated Raynaud's disease is a purely functional disturbance attendant on central impulses or whether it has to do with the local fault of the blood vessels. The best evidence I can offer for my contention of the central origin of this type of Raynaud's disease is the fact mentioned, and that we have never seen recurrence of vasomotor symptoms after lumbar sympathectomy. I agree with Dr. Kerr that there is a good deal of difficulty in the diagnosis of some of these cases. It should be admitted occasionally that an atypical case cannot be classified and the diagnosis should be considered indeterminate. Dr. Kerr has stated that sympathetic neurectomy does not get to the root of the problem. Gastro-enterostomy or medical treatment does not get to the root of the etiology of duodenal ulcer and yet these methods are followed by excel-

lent results in a considerable percentage of cases. With regard to the proof of cure which Dr. Kerr has rightfully raised, it has been our experience at the Mayo Clinic that patients having had lumbar sympathectomy and trunk resection who have been followed for as long as seven years have remained absolutely free from vasomotor disturbances. Our experience is in agreement with that of Dr. A. W. Allen, who has shown that sympathetic neurectomy as a treatment for Raynaud's disease involving the upper extremities is not as efficient as when the same procedure is utilized for the treatment of the condition in the lower extremities. Usually, but not always, sweating tests will show that the sympathetic fibers have not been entirely removed. I believe that if the sympathetic control is entirely removed in uncomplicated cases of Raynaud's disease the result will be a cure. If there is return of the condition following sympathectomy, one must believe that the operation was incomplete or that the diagnosis of uncomplicated Raynaud's disease was erroneous.

FURTHER EXPERIENCE WITH CORTIN THERAPY

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The use of cortin as a therapeutic measure is still in the experimental stage. Sufficient data have been gathered by various observers to indicate its efficiency in ameliorating the symptoms and altering the course of many cases of Addison's disease. This malady represents the only condition in which cortical insufficiency has been proved definitely.

The use of cortin in Addison's disease has not been so successful as the use of insulin in diabetes, and perhaps this is due to inadequate dosage. There may be other factors in the etiology of the Addison's syndrome. In the present paper, we are giving further experiences in the treatment of Addison's disease and in the use of cortin in other clinical conditions. There are undoubtedly other conditions in which cortical insufficiency exists, but as there are no real criteria of such inadequacy, one can only try the effect of cortin in cases in which this insufficiency is suspected. If a response is obtained, it may be due to a substitution therapy or to the pharmacologic effect of cortin itself.

Cortin has been administered subcutaneously in every instance unless otherwise stated. One cubic centimeter of extract contained the product of 40 Gm. of cortex.

ADDISON'S DISEASE

In addition to those cases of Addison's disease already reported,[1] we have treated two patients directly under our control and we have furnished extract in fourteen cases in which we supplied the directions for treatment. We are reporting the cases that seem to contribute something to knowledge of the use of cortin in Addison's disease.

The following is an example of a case in which the patient showed slow but fairly steady improvement with continuous treatment. He did much better at home than in the hospital; greater freedom and more congenial surroundings, no doubt, were contributing factors.

CASE 1.—S. R. S., a farmer, aged 50, was admitted to the Buffalo General Hospital on Jan. 6, 1932, and was discharged on February 14. (Before admission he had been under cortin treatment for two months.) He stated that he had noticed easy fatiguability for two years, and that he had not been able to work for fourteen months. Insomnia and poor appetite had been present for at least two years. Pigmentation was called to the patient's attention first in September, 1930. On July 8, 1930, he fainted, vomited and was confined to bed for two days. He had lost 24 pounds (10.9 Kg.). There was a grayish-brown pigmentation of the mucous membrane inside the cheeks. The systolic blood pressure varied from 120 to 88 and the diastolic from 82 to 64 mm. There was a generalized brown pigmentation of the entire integument, especially over the buttocks, scrotum, penis and the posterior portion of the chest. There were very dark freckles on the face, neck and arms.

The urine was essentially normal, and the renal function tests gave negative results. The erythrocytes were 3.4 millions per cubic millimeter; hemoglobin, 82 per cent; blood sugar, 120 mg.; blood urea, 37 mg. per hundred cubic centimeters, and basal metabolism, minus 15 per cent.

Two cubic centimeters of physiologic solution of sodium chloride was given subcutaneously daily for five days as a control before cortin was administered. This brought no change. On Nov. 9, 1931 (prior to hospital observation), cortin, 5 cc. three times daily, was started. In three days the patient reported that he felt and slept better. This improvement continued and weight was gained slowly. On November 18, his blood pressure was 105 systolic and 78 diastolic. On December 1, the amount of cortin was doubled. He soon was able to do 60 per cent more work on the ergometer than before. On December 14, his weight was 137 pounds (62.1 Kg.)—a gain of 7 pounds (3.2 Kg.) in one month. On discharge he was instructed to take 5 cc. of cortin twice daily. On March 28, he reported that he felt better and that he had gained 17 pounds (7.7 Kg.) over his weight of December 14.

Two patients with Addison's disease have been treated on whom thyroidectomy had been performed several years before. Both showed improvement under treatment, but the second, who had the more severe case, died seventy-three days after treatment was instituted. To judge from the symptoms, the amount of extract was inadequate.

CASE 2.—G. W., a trained nurse, aged 32, married, was admitted to the Buffalo General Hospital on Jan. 18, 1932, and was discharged on February 9. A thyroidectomy for exophthalmic goiter had been done in October, 1925. Following this she was clinically well for about a year and gained in weight and strength. She then became tired and "stupid" and gained 25 pounds (11.3 Kg.). Her basal metabolism at that time was minus 20 per cent. She was given desiccated thyroid, which produced questionable improvement. Her menstruation had been normal up to 1927. Her periods then became frequent and profuse, but menstruation ceased abruptly in January, 1930. From that time on hot flashes and increasing fatigue appeared. Her appetite was impaired; she was fond of salty, but averse to sweet foods. In the last six months there were frequent backaches in the region of the kidney. Frequent pains were more noticeable at night, usually from the knee to the ankle. She became more nervous and was easily irritated. She had less patience and was inclined to dislike social contacts. Her memory became poor. In the last eighteen months her skin had become brown with numerous spots that varied in size and resembled freckles. Formerly her skin was fair. Brown spots were present on the mucous membranes.

Her blood pressure was 80 systolic and 70 diastolic; pulse rate, 80, and weight, 110½ pounds (50.1 Kg.). There was no anemia; the leukocytes were 4,000, 40 per cent of which were lymphocytes. The urinalysis gave negative results, and the phenolsulphonphthalein output was 48 per cent in two hours.

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Read before the Section on Pharmacology and Therapeutics at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

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1. Hartman, F. A.; Thorn, G. W.; Lockie, L. M.; Greene, C. W., and Bowen, B. D.: Treatment of Addison's Disease with an Extract of the Suprarenal Cortex (Cortin), J. A. M. A. **98**: 788 (March 5) 1932.

The blood urea was 32 mg. and the urea clearance test was 42 per cent of normal. The urea concentration test (Maclean) was 2.5 per cent in the second hour specimen. The blood sugar was 106 mg. There was an absence of free hydrochloric acid and pepsin in the gastric contents; no histamine was given. The basal metabolism was minus 15 per cent.

Cortin, 5 cc. twice daily, was started on January 28. In forty-eight hours the patient stated that the annoying pains in the legs had entirely disappeared, that she was more alert mentally and less easily fatigued. Her appetite was improved and again she liked sweets. Her blood pressure was 100 systolic and 80 diastolic. The dosage was reduced to 3 cc. twice daily, which proved to be inadequate. With the former dosage, she returned to her work and carried on successfully. On April 9 she wrote us that her weight had increased 6½ pounds (2.7 Kg.), that the pains in the legs remained absent, but that there had been no return of menstruation.

CASE 3.—C. C., a married woman, aged 32, was under the observation of Dr. Anders Frick, Augustana Hospital, Chicago. She had been getting progressively weaker since the spring of 1930, when fatigue was first observed. Her skin had been darker since the autumn of 1930. In the spring of 1931 she had an acute infection of the upper respiratory tract after which she was unable to resume her usual work. In July, 1931, vomiting after meals occurred. These attacks at first lasted but a few days but gradually lengthened, and by October they had reached a duration of several weeks. At this time the patient was taken to another hospital where saline and dextrose solutions were given intravenously. Under this treatment she improved and was later transferred to the Augustana Hospital. Her loss of weight was about 15 pounds (6.8 Kg.) since the inception of the illness. From her past history it was learned that she had a thyroidectomy in 1927 for an undetermined cause.

The patient was naturally a blond, but by now her skin had become a light tan with darker areas around the mouth, the backs of the hands and the extensor surfaces of the elbows, knees and heels. The patient was thin, weighing 85 pounds (38.6 Kg.). The blood pressure was 55 systolic and 40 diastolic (several readings). There was no anemia. The leukocytes were 14,000, 50 per cent of the cells being small lymphocytes. The urine showed a trace of albumin in an uncatheterized specimen. The blood sugar was 100 and the blood urea 98 mg. per hundred cubic centimeters.

Cortin was started Oct. 29, 1931, 5 cc. five times daily. On the fourth day the patient reported that her strength was greater. Then the dosage was decreased to four injections daily. On the seventh day it was decreased to two doses, and on the ninth to one. Within ten hours she reported that weakness was recurring. It was finally determined that 5 cc. three times daily kept her in fair condition. The blood urea dropped to 57 mg. and the systolic blood pressure increased to 86 mm. The patient, after her return home, received inadequate doses at irregular intervals. She died about two months after discharge. No autopsy was performed.

In the following case there was improvement under treatment, and menstruation returned for the first time in two and one-half years.

CASE 4.—A single woman, aged 32, was under the observation of Dr. A. P. D'Zmura in the Pittsburgh Hospital. She had had two previous admissions in 1928 for acute infections. At those times there was no suggestion of Addison's disease. However, when it was suspected later, the patient stated that she first noticed weakness in 1927. She had lost 40 pounds (18.1 Kg.) of weight in a period of four years. Pigmentation of the face, abdomen and extremities had been present since December, 1929. She had had nausea, alternating diarrhea and constipation for three or four months. Insomnia had increased, so that only two hours of sound sleep were obtained each night. She had considerable pain in the joints and occasionally in the back. During the past two years she had had many severe crises.

During November, 1931, the patient was barely able to sit up and could not stand without support. The skin was diffusely pigmented. The blood pressure was 110 systolic and 80 diastolic, both in the recumbent and in the standing postures. The blood sugar was 83 mg., and blood urea, 22 mg. per hundred cubic centimeters; erythrocytes, 4 millions per cubic millimeter, and basal metabolism, minus 22 per cent.

Cortin was started early in December, 5 cc. twice daily. In two weeks the patient's appetite was better. She was more interested in her surroundings and was getting more sleep. In a month's time she was out of bed and able to walk short distances. Twenty-four days after the treatment was begun she had a scant menstrual period, the first in two and one-half years. Twenty cubic centimeters of the extract daily seemed necessary to sustain her, as a reduction of that dosage was followed by a return of symptoms. She had another menstrual period, lasting one day, 110 days after beginning to take cortin. At the end of four months the extract was discontinued. Since then there has been a return of anorexia and nausea and an increase of pigmentation. The weakness has become so pronounced that she is unable to stand without support.

The following case reported by Dr. Allan T. Kenyon of the Billings Memorial Hospital of Chicago is of interest because the patient was successfully carried through a very severe attack of diphtheria in the presence of an active pulmonary tuberculosis.

CASE 5.—A housewife of 44 was fairly well until April, 1931. At this time a benign tumor and a tuberculous-like ulcer were excised from the rectum by Dr. Vernon David of Presbyterian Hospital. Some two weeks later, she began to tire easily on short walks and at her household tasks. Anorexia and nausea appeared, and as the summer wore on vomiting occurred from time to time, and the weakness became extreme, with syncope on several occasions. Three weeks before entering the hospital, she collapsed in the bathroom. Dr. Richard Torpin, her family physician, administered fluids intravenously and moved her to Cook County Hospital, where, after vigorous supportive measures, she rallied from the verge of coma. Leaving the hospital on her own responsibility, she remained at home in a somewhat improved but precarious condition, very weak in the morning, vomiting off and on, until her entrance to Billings Memorial Hospital on September 9.

On entrance she was very weak, somewhat dehydrated and considerably emaciated. The temperature was 102.3 F.; the pulse rate varied from 82 to 130 and was weak and thready; the respirations were 18. The skin was a little darkened about the mouth and arms but not definitely more than a summer's tan. There was doubtful pigmentation of the soft palate. The abdomen was a little tender generally. The blood pressure varied from 95 systolic and 68 diastolic to 76 systolic and 66 diastolic during the night. Red blood corpuscles were 5,600,000; hemoglobin, 105; white blood corpuscles, 21,600, with 61 per cent polymorphonuclears, 34 per cent lymphocytes, 2 per cent mononuclears and 3 per cent eosinophils. The urine showed albumin one plus and 10 white blood cells per high power field. Roentgenographic examination revealed tuberculous mottling of both apexes. The blood sugar was 70 and urea, 28.3 mg. per hundred cubic centimeters.

At noon, September 10, when it became apparent that the patient was sinking, 10 cc. of cortin was given intravenously, followed by 5 cc. subcutaneously in one hour and every two hours thereafter for ten doses; 55, 40, 30, 20 cc., respectively, were administered on successive days. Fluids were given abundantly. On the second day there was little change; the temperature was 99 F.; the blood pressure varied from 74 systolic and 50 diastolic to 84 systolic and 56 diastolic. The third day she showed definite improvement which continued from then on. On the eighth day her appetite improved, and by the twelfth day she was eating well and her strength was strikingly increased. By the twentieth day her blood pressure had reached 102 systolic and 64 diastolic, where it remained. By October 5, the twenty-sixth day of treatment, she was up and about, two hours daily, and the cortin, which had been given with little interruption in 20 cc. amounts daily since September 14, was stopped. From October 5 to October 20 she remained in the hospital without cortin. She was then discharged in good condition with a blood pressure of 100 systolic and 64 diastolic, having gained 5 pounds (2.3 Kg.); but in view of the persistent low grade fever of from 99 to 99.6 F. the pulmonary lesion was regarded as probably active and rest in bed was advised.

For a time she got along very well. However, on November 6, following two or three days of aching muscles, she suddenly developed nausea, vomiting and prostration. She was readmitted to the hospital the night of November 7, prostrate, delirious, vomiting, and with shallow gasping respirations of 40 per minute. The blood pressure was 106 systolic and 74 diastolic; temperature, 103.4 F.; white blood count, 12,000, with 61 per cent polymorphonuclear leukocytes. No extension of the pulmonary lesion could be demonstrated either by physical or by roentgenographic examination. Cortin was started on November 8, and 63 cc. given within the first two days, then 15 cc. daily for two days, with 10 cc. on the third day. Within forty-eight hours, vomiting had abated, and the patient's general condition was much better. The appetite returned on the fifth day. The blood pressure, which had never been low, remained unchanged. On the sixth and seventh days she received 10 cc. of cortin, on the eighth 5 cc., and thereafter 3 cc. daily for eight days. She was doing fairly well save for a considerable degree of fatigue.

On November 24, eighteen days after readmission, a severe acute diphtheritic tonsillitis developed. The temperature rose to 103.6 F. with prostration, vomiting and delirium. The blood pressure remained at 106 systolic and 56 diastolic. Diphtheria antitoxin, 20,000 units, and 20 cc. of cortin were given. On November 25, the patient was worse; the throat lesion was spreading to the left side, and she was weak, delirious and vomiting constantly. The blood pressure was 100 systolic and 70 diastolic. Sixty-three cubic centimeters of cortin and 55,000 units of diphtheria antitoxin were given. On November 26, she was pulseless from time to time. The blood pressure was 84 systolic and 60 diastolic. Diphtheria antitoxin, 25,000 units, and small doses of epinephrine were given. By afternoon the patient was a little brighter, and the blood pressure was 108 systolic and 70 diastolic; vomiting had ceased, and the tonsillar membrane was breaking up. The temperature was 101.4 F. On November 27, she was much better. The throat culture was positive for diphtheria bacilli for the first time; 20,000 units more of antitoxin was given. From then on improvement was steady, although a low grade fever of 99.4 F. remained. The blood pressure averaged 100 systolic and 64 diastolic. From November 28 to December 22, 180 cc. of cortin, in from 5 to 10 cc. amounts daily, was given; from December 22 to February 1, 131 cc. was administered in series of from 30 to 40 cc. in three to five days, followed by respites of from four to five days. During this period the patient was in a fair condition, although her strength was limited and her appetite capricious, and she complained a good deal of aching muscular pains. She was evidently receiving less than the optimal amount of extract.

On February 1 she was transferred to the Cook County Hospital, where she continued to receive cortin, about 3 cc. daily. The family removed her to her home about February 21, where she continued to receive small amounts of extract. February 29 she grew rapidly worse and soon lapsed into coma. Twenty cubic centimeters of cortin was rapidly administered March 1, and a further amount terminally on March 2, but death occurred that morning.

Dr. Richard Torpin performed a limited autopsy. The right suprarenal could not be found. The tissues on the left examined by Dr. Esmond R. Long revealed nearly total replacement of the suprarenal by fibroplastic fibrocaseous tuberculous lesions.

A woman who had been in poor health for thirteen years with a low blood pressure for five years developed typical symptoms of Addison's disease. By the use of moderate doses of cortin she maintained an improved condition for about four months.

CASE 6.—A woman, aged 41, married, was under the observation of Dr. C. H. Cunningham, St. Vincent's Hospital, Indianapolis. Weakness, nervousness, loss of weight and anorexia followed a severe attack of Vincent's angina in the fall of 1930. A few months later pigmentation of the skin was observed. On Aug. 15, 1931, she complained of abdominal pains, vomiting and diarrhea. Pains in the arms and legs were also present. She was admitted to the hospital on September 7, where intravenous dextrose and physiologic solution of sodium chloride were given. The blood pressure was 78 systolic and 62 diastolic, and the pulse rate was 140. It was learned that the patient had had a low blood pressure for five years, and that for a year before the inception of this present history her systolic pressure had not exceeded 90 mm. She had another crisis in October and one in November.

The urine was normal except for a trace of albumin. There were 4 million erythrocytes per cubic millimeter and 80 per cent hemoglobin. Roentgenographic examination of the chest and of the gastro-intestinal tract were both negative.

Cortin, 5 cc. twice daily, was started November 14. This was followed in a few days by improvement in appetite, cheerfulness and rest. On January 14, 1932, it was reported that the patient had been doing well since cortin was begun. Her weight was increasing and she was able to be out of bed a few hours each day. Abdominal pain, however, persisted, and this often required morphine for its relief. Her skin seemed to become less dark. An average of from 5 to 7 cc. of extract daily was continued, but there were days when no cortin was given. Death occurred rather suddenly and unexpectedly on March 31.

Another case illustrates the need of large amounts of extract in a crisis.

CASE 7.—A woman, a physician, aged 65, was under the care of Dr. Edward B. de Silva, Rock Island, Ill. She regarded herself in good health until three years previously when weakness and exhaustion followed a period of overwork and poor food while acting as a missionary. In the summer of 1931, gastric distress, nausea and poor appetite appeared. Her gait was often staggering and occasionally she collapsed. She improved somewhat in a sanatorium in Colorado. She developed "vitiligo" on the backs of the hands, knees and neck; also, there was a bluish-brown discoloration of the mucous membrane of the mouth. In August, 1931, her systolic blood pressure (several readings) varied between 110 and 94 and the diastolic between 68 and 62 mm. Fatigue increased, and in January, 1932, an attack of vomiting occurred.

The erythrocytes were 4 million per cubic millimeter; leukocytes, 8,000, with 60 per cent polymorphonuclears. The gastric contents contained no free hydrochloric acid. The urine was normal.

When cortin was received on Jan. 22, 1932, the patient was in coma, and within one-half hour after the administration of the first dose (15 cc.) she showed improvement. In four hours 10 cc. was given. This brought her out of coma. Five cubic centimeters was given the next day, but her condition became worse. Two 10 cc. injections were administered on the third day. She remained conscious and was able to talk during this period. Only 5 cc. of extract was available, and the injection of this on the fifth day was without effect. The patient died five hours later.

Histopathologic examination (Dr. F. H. Lamb) of the suprarenals was as follows: Extensive fibrocaseous tuberculosis was seen in both suprarenals; very little suprarenal tissue remained.

Of the nine patients with Addison's disease whose treatment has been completely under our control, five survived. One died of pneumonia, 238 days after treatment was instituted. The second patient, who received a limited amount of extract, died within two days. A third died either on account of inadequate dosage or because his condition was allowed to advance too far. The fourth patient died ninety days after stopping cortin.

In the treatment of Addison's disease due regard should be given to the conditions which increase the demand for cortin in order to avoid them as far as possible. It has been shown in cases presented here and elsewhere,[2] that infections even in minor degree increase the demands for cortin. In experiments on animals, it is also indicated that toxins,[3] exposure to

2. Rowntree, L. G.; Greene, C. H.; Swingle, W. W., and Pfiffner, J. J.: Addison's Disease: Experiences in Treatment with Various Suprarenal Preparations, J. A. M. A. **96**: 231 (Jan. 24) 1931. Hartman and others (footnote 1).

3. Perla, D., and Marmorston-Gottesman, J.: Effect of Injections of Cortin on Resistance of Suprarenalectomized Rats, Proc. Soc. Exper. Biol. & Med. **28**: 475 (Feb.) 1931. Hartman, F. A., and Scott, W. J. M.: Protection of Adrenalectomized Animals Against Bacterial Intoxication by an Extract of Adrenal Cortex, J. Exper. Med. **55**: 63 (Jan.) 1932.

cold,[4] exposure to high temperatures,[5] and likewise exercise [6] increase the demands on the suprarenal gland, possibly necessitating more cortin. Mental worry should also be avoided. Briefly, pleasant, comfortable surroundings and plenty of rest are indicated. Any exacerbation of symptoms should be followed promptly by the injection of cortical extract. In a crisis we find it good practice to start with 5 or 10 cc. of extract intravenously, following this within an hour or so with an equal quantity of extract subcutaneously. These injections are kept up thereafter at intervals of from two to four hours until some improvement is shown. With signs of improvement, the extract should not be discontinued, but merely reduced somewhat in amount and frequency. Even after complete recovery from a relapse, it is wise to continue treatment if possible, as another relapse may occur. Repetition of these relapses is dangerous. Moreover, the stage may be reached in one of these relapses from which it is impossible to bring about recovery. It is also advisable in all crises to administer fluids in quantities on account of dehydration.

Frequently, severe cases of Addison's disease are not brought to the attention of the physician until it seems to be too late for cortin to be of much value or, in some instances, the physician does not recognize the necessity of large amounts of cortin at the critical stage. We have supplied extract to at least eight patients who died either because of inadequate treatment or because they had reached the stage from which it is possible that cortin cannot bring about recovery. If the amount of cortin given is relatively small, then inadequacy of dosage may be the cause of death. Case 7 may be of this type. In two of our cases,[1] cases 2 and 3, death occurred perhaps for this reason. In the second of these cases, the termination of which has not yet been reported, death occurred suddenly one night 192 days after starting treatment with cortin. The patient was then getting what we considered a maintenance dosage, 20 cc. a day. If we had known that he was nearing a crisis perhaps a large increase in cortin might have revived him, as once before he had recovered from a similar collapse.

Greene, Rowntree, Swingle and Pfiffner [7] found that a majority of patients with Addison's disease treated with extract gained in weight. This was also true in our cases.

Baird and Albright [8] cited a case of Addison's disease in which the patient, in a moribund condition, was revived by cortin alone. One of our patients who revived from a crisis received cortin alone (case 4 [1]). All other such patients received fluids in addition to cortin.

A number of investigators have obtained beneficial results in Addison's disease from the injection of cortical extract.[9]

Benham, Fisher, More and Thurgar [10] treated three patients with Addison's disease by the injection of limited amounts of cortical extract. The patients showed improvement but all eventually died. In some instances, the extract was apparently inadequate. In their case 3, during the crisis, cortical extract was discontinued on the third day because of spasmodic twitching and rigors. It is possible that if extract had been continued the patient would have come out of the stage of heightened irritability. We have found that patients in the last stages pass through a period of increased irritability (case 3 [1]). Improvement with extract brings about the stage of calm. However, there is a possibility of using a toxic extract unless it has been tested on animals.

EFFECT IN NORMAL SUBJECTS

Although most of our extract has been used in the treatment of Addison's disease, we have tested its effect for short periods in many other conditions in which asthenia was an outstanding symptom. Many of these patients have seemed to improve. This response, however, could be attributed to a pharmacologic action of cortin as we have obtained similar effects, though of minor degree, in normal persons.

There being no laboratory method for the accurate estimation for pharmacologic effect of cortical extract as is the case with insulin, thyroid and epinephrine, it is often extremely difficult to evaluate its action in clinical cases. Aside from subjective sensations, the ergometric test [1] is our only laboratory measuring stick. Patients who complain of asthenia in the absence of a definite organic basis are frequently the type who are suggestible. Consequently, we have analyzed this group with that thought in mind. Cortical extract has, however, in our opinion, a definite pharmacologic action which is manifested by a capability of increased effort, a certain composure of the nervous system and a sense of well-being. We have attempted to eliminate the psychic effect as far as possible by using laboratory workers as our normal subjects. All subjects received more than one injection. Usually these were intermittent. The dosage administered ranged between 1 and 6 cc. The psychologic effects were ruled out through the occasional use of injections of saline, the subject being ignorant of the composition of the fluids injected. In some instances, extract of brain tissue prepared in exactly the same way as suprarenal cortical extract was used as a control. This, however, was without effect.

Twelve subjects were equally divided between the sexes. They ranged in age between 26 and 48. One cubic centimeter of extract usually produced some effect. From 3 to 5 cc. produced an unquestioned effect which lasted for several hours. Within an hour after the injection, the subject was apt to feel quite sleepy unless he were actively engaged in something which counteracted this effect. If he went to sleep, he slept soundly for an hour or so. Whether a nap were taken or not, the subject felt more active in the evening, seemed to be more alert and physically more fit. The sense of well-being was noticeably increased. The night's sleep following the injection of cortin was more sound and the subject awoke the next day feeling more rested than usual. This effect on sleep was not observed by a good sleeper but was very evident in the light sleeper.

4. Hartman, F. A.; Brownell, K. A., and Crosby, A. A.: The Relation of Cortin to the Maintenance of Body Temperature, Am. J. Physiol. **98**: 674 (Nov.) 1931.

5. Hartman, F. A.; Lockwood, J. E., and Lockie, L. M.: Lowered Resistance to Heat in Adrenal Insufficiency, Proc. Soc. Exper. Biol. & Med. **29**: 409 (Jan.) 1932.

6. Hartman, F. A., and Thorn, G. W.: The Effect of Cortin in Asthenia, Proc. Soc. Exper. Biol. & Med. **29**: 48 (Oct.) 1931.

7. Greene, C. H.; Rowntree, L. G.; Swingle, W. W., and Pfiffner, J. J.: Metabolic Studies in Addison's Disease: The Effect of Treatment with the Cortical Hormone of the Suprarenal Gland, Am. J. M. Sc. **183**: 1 (Jan.) 1932.

8. Baird, P. C., Jr., and Albright, Fuller: Four Cases of Addison's Disease Treated with Cortin (Hartman), Arch. Int. Med. **50**: 394 (Sept.) 1932.

9. Ball, R. G., and Lansbury, John: The Treatment of a Case of Addison's Disease with the Cortical Hormone of Swingle and Pfiffner, Canad. M. A. J. **24**: 695 (May) 1931. Simpson, S. L.: The Effect of the Suprarenal Cortex in Addison's Disease, J. Physiol. **72**: 4, 1931. Rowntree and others (footnote 2).

10. Benham, H. W.; Fisher, Mary; More, I., and Thurgar, C. J. L.: Three Cases of Addison's Disease Treated with an Extract of Suprarenal Cortex, Lancet **1**: 125 (Jan. 16) 1932.

When the appetite was faulty, cortin seemed to stimulate it. Objectively, some subjects showed an increase in the power to work on the ergometer. This increase ranged from 50 to 500 per cent, the high point coming a few days after cortin was started. There seemed to be an increased reserve in any subject who had been nervous or tired. In four of the women, the injection of cortin, from 3 to 5 cc., daily for four or five days, brought on menstruation from three to five days earlier than usual.

EFFECT IN OTHER CLINICAL CONDITIONS

Fifty-three cases other than Addison's disease have been studied. Cortin was administered to three patients with myasthenia gravis; two of these cases have been reported. The third patient had shown some improvement previously with ephedrine.[11] Later this patient received 5 cc. of cortin twice daily for one week. There was no continued improvement in any of the patients.

Six patients with muscular atrophy and one with muscular dystrophy have been treated with cortin. The ultimate course of the disease has not been influenced in any case, but every one has responded with temporary improvement as manifested by decreased muscular fibrillation, greater freedom of movement and an increased sense of well-being.

Four patients with toxic goiter have been treated with pronounced improvement in one, an early case in which there were not only the subjective responses of increased sense of well-being and lessened fatigue, but also a gain in weight, reduction in the pulse rate and greater fatigue resistance as shown by the ergometer. Cortin was not administered in this case until after several weeks of rest in order to rule out spontaneous improvement. The other three cases were more severe. No response occurred in one. The remaining two seemed to be halted slightly in their downward course, but for a short time only.

Asthenia has been temporarily reduced in ten of sixteen cases which were chosen as most likely to show a response. Some of these have been reported.[12] Six of the patients were tested objectively by the ergometer. Six that showed definite improvement were controlled by the injection of salt solution or epinephrine which evoked no response.

The histologic changes in the suprarenal cortex which accompany many infections suggest a possible application of cortical extract. The work of Perla and Marmorston-Gottesman and of Hartman and Scott [3] and that of others has suggested the possible use of cortin in infections. In certain cases of postinfectious asthenia, to which reference has already been made, cortin seems to reduce the asthenia. However, in active infections, a condition in which controls are usually inadequate, the use of cortin must be viewed very critically. We have tried cortin in a few cases of acute and of chronic infections. In those in which improvement has occurred, it could not be attributed definitely to the extract.

Throughout the consideration of this great variety of cases, one who has studied the response to cortin can pick out characteristic reactions and usually easily distinguish the difference between suggested and actual effects of the extract. These effects require hours or sometimes as much as a day or so to make their appearance, and likewise if treatment has been going on for a time, a similar period may elapse before the effects disappear. Therefore, when we give a patient injections of cortical extract and get a definite improvement within a day or two, unless his illness has been very brief and quick, spontaneous changes might have been expected, we attribute such improvement to cortin. The cause of this improvement is another matter. It may be the addition of cortin to an already inadequate supply within the organism, or it may be due to the pharmacologic effect of cortin added to a normal output. Until we have a definite means of detecting cortical insufficiency, this cannot be settled. Therapeutically, however, the question that interests us is—What, if any, is the value of cortin? It has now been fairly well established that it can play an important part in the treatment of Addison's disease. It will require a great amount of work to decide its value outside of Addison's disease, because it has such a general effect on the organism. We believe that cortin eventually will become a useful agent to the clinician, but it will take much careful work before it will be known in what conditions it is really worth while.

11. Edgeworth, Harriet: A Report of Progress on the Use of Ephedrine in a Case of Myasthenia Gravis, J. A. M. A. **94**: 1136 (April 12) 1930.

12. Hartman, F. A.; Beck, G. M., and Thorn, G. W.: The Effect of Cortin in Clinical Condition in Which There are Nervous Manifestations, J. Nerv. & Ment. Dis., to be published. Hartman, F. A.; Thorn, G. W., and Potter, I. W.: Cortin in a Case of Possible Adrenal Insufficiency During Pregnancy, Endocrinology **16**: 155, 1932. Hartman and Thorn (footnote 6).

ABSTRACT OF DISCUSSION

DR. A. W. ROWE, Boston: The authors have reiterated, as have others, the difficulty of carrying through cases in any quantity because of an actual lack of this potent preparation. The time may be looked forward to when adequate amounts of this material have been secured, and then in the hands of the biochemists the constitution of cortin, whether an entity or a mixture, will be established; ultimately the synthesis of this active product may be effected, as other active hormones have been synthesized. All the work that has been done so far, successful as it has been, has been seriously handicapped by a lack of material. The second point that I think requires comment is the difficulty of identifying Addison's disease in its earliest stages. The terminal phase of Addison's disease is reasonably easy to identify. Yet I feel sure there are many who have had referred to them cases, on the one hand, of bronze diabetes and, on the other, of primary anemia which had been designated as cases of Addison's disease. One may say that the method of approach to the two conditions is so obvious that such a mistake is inexcusable and yet it is a fact that one does see case after case in which an erroneous diagnosis has been made, chiefly, I think, on the basis of an asthenia plus a pigmentation. There are certain individuals who present a condition described many years ago by Sajous as a hypoadrenia. I have never seen a case which would warrant this designation of what one might call a little Addison's disease, which, after all, was Sajous's concept—an inadequacy of the suprarenals. But in the earlier stages of Addison's disease in the few cases I have had an opportunity to study, there were certain departures from the normal that differ in degree but not in kind from those observed later. If I may recapitulate them briefly, there will be a marked lowering in the basal metabolic rate, partly due of course to the malnutrition that is a characteristic feature of the disease; levels inferior to other depressions, with the sole exception of thyroid failure, will be found; marked disturbances of the carbohydrate metabolism with a lowering of the utilization capacity; blood pictures which indicate a definite nephritic condition with an increase in the nonprotein, the urea and the uric acid nitrogens; changes in the blood with a depression of the hemoglobin, a depression of the erythrocyte count, but with a greater depression of the latter, so that the color index rises toward 1 and may very slightly exceed it.

DR. C. H. GREENE, Rochester, Minn.: At the Philadelphia session, Dr. Rowntree and I reported before this section our results in the treatment of the crises of Addison's disease with

extracts of the suprarenal cortex. Dr. Hartman and his co-workers have presented a summary of the similar experience which they have had with this type of treatment. These results have been amply confirmed by the reports of Harrop, Simpson and others. The clinical application of the experimental studies of Swingle and Pfiffner and of Hartman has established beyond question the importance of hormonal deficiency in the pathogenesis of Addison's disease. The demonstration of this deficiency greatly clarifies the problem of treatment. From this standpoint Addison's disease may well be compared to diabetes mellitus, which is now generally accepted as due to a deficiency in the supply of insulin by the islands of Langerhans. The principles that have been established for the management of patients with diabetes apply, with appropriate modification, to the care of patients with Addison's disease. These are: 1. General care designed to keep the demands on the patient's own suprarenals at a minimum. This involves rest, and protection from strain of any sort, physical, mental or emotional. An adequate intake of food and fluids must also be provided. 2. Provision for an adequate supply of the lacking hormone. Total loss of the suprarenal function is rare in Addison's disease, if it occurs at all. Partial function persists and successful treatment involves the supply of sufficient hormone to make up the difference between the amount of hormone produced by the patient's own suprarenals and the amount necessary for the maintenance of health. This amount varies tremendously in different patients. Unfortunately, there is no single simple criterion whereby the requirement of cortical hormone of a patient with Addison's disease may be measured. The daily dosage must therefore be determined by clinical standards and, whenever possible, sufficient given to insure a sense of physical well being, a good appetite and to prevent loss in weight. 3. Continuous medical supervision and treatment. The untreated patient with Addison's disease is highly susceptible to intercurrent infections. Such infection or any undue exertion or physical strain may precipitate a crisis of acute suprarenal insufficiency. This point must be fully appreciated by the physician, for it is much easier and cheaper to keep a patient well by continuous therapy than it is to bring about recovery after the onset of crisis. At the slightest sign of an infection the dose of cortical extract must be increased markedly with the expectation of averting a crisis. It is easy to outline the requirement for successful treatment in Addison's disease. To attain this is a far different proposition and one that will tax the skill and judgment of the physician, apart from the question of expense, which still makes treatment prohibitive in many instances.

DR. J. T. HALSEY, New Orleans: I wish to ask a few questions. In the first place, what difficulty is there in connection with the repeated hypodermic injections? Are these preparations well borne locally? Is there any great incidence of infection? Have there been any instances of the development of an allergy in these cases, particularly in the patients treated for a considerable length of time—treatment interrupted and then resumed?

DR. FRANK A. HARTMAN, Buffalo: I agree with practically everything that has been said by Drs. Rowe and Greene. A cheap source of cortin, of course, is needed; presumably it will be obtained by synthesis. All physicians would like to be able to detect hyposuprarenalism. It was thought that the use of the cortical hormone might make it possible to determine this condition; but the fact that apparently normal individuals respond in some instances causes this not to seem feasible. Dr. Greene pointed out that purgation brings on symptoms. I would emphasize that anything that causes dehydration is to be avoided. I wonder whether epinephrine is of much value in Addison's disease. It is quite possible. Early work showed that in suprarenalectomized animals the injection of epinephrine shortened the survival period and brought on symptoms; indeed, it acted like a toxin. It is true that sometimes an animal that is prostrate may be stimulated to get up and walk across the room, but in a few minutes, or in an hour or so, he is back in the old condition. However, judging from the experience of Drs. Greene and Rowntree, there must be some cases in which it is of benefit. The failure of these investigators to obtain effects in postinfectious asthenia is noted. We found that in some cases in which we expected pronounced effects there were none. On the other hand, in certain cases in which we had not expected them we obtained pronounced effects. One could not prophesy. There is undoubtedly, in our experience, an effect in certain cases. Although often only temporary, occasionally the subject was raised to a higher level from which he did not return. In toxic goiter, the metabolic rate was changed but little. In one case, the pulse was decreased from 100 to 80. This was an early case in a youth, aged 18 years. The changes did not show for several days and developed only gradually. He had no other medication and had been kept quiet for two or three weeks to see what rest would do as a control. He increased in weight and showed the typical pharmacologic effects. Moreover, he has maintained his improvement. That is only one case. We could not prove that cortin was responsible for the change. Dr. Halsey raises the question about the injections. We have had no difficulty in that respect. Rarely have we had a local reaction. In some of our early work, the first patient that was treated for 238 days received injections on an average of four times a day and for part of that time he gave them himself, and yet there were no infections and no reactions. There were no allergic phenomena.

A COMPARISON OF EXOPHTHALMIC GOITER IN BOSTON AND CHICAGO

WITH SPECIAL REFERENCE TO IODINE REACTION

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CHICAGO
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This study was made to determine whether the intensity of exophthalmic goiter is different in a goitrous area (Chicago) from that in a nongoitrous area (Boston). It seemed particularly worth while to do this because Coller and Potter [1] compared the disease in Ann Arbor, Mich., and Boston and found that in Ann Arbor the response to iodine was less and the ratio of males to females was greater. In a study of this sort it is preferable to deal with factors which can be measured. For this purpose we have selected the initial height of the basal metabolism, the reduction in basal metabolism during the administration of iodine, the sex ratio and the age at onset.

THE INITIAL HEIGHT OF THE BASAL METABOLISM

While marked individual variations occur, as a general rule the severity of the disease is roughly proportional to the elevation of the basal metabolism. In the lower part of chart 1 we have compared the initial height of the basal metabolism in 133 cases in Chicago with that in 128 cases in Boston [2] and 128 cases in Ann Arbor.[1a] The majority of the Chicago observations recorded in this part of the chart were made in the dispensary, whereas only a few of the Boston observations were made in this manner and none of the Ann Arbor observations. In view of this and the fact that the Boston data were collected at an earlier date than the Chicago data,[3] it seemed desirable also to compare

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From the Department of Medicine, Rush Medical College, and the Presbyterian Hospital, Chicago, and the Metabolism Laboratory and Thyroid Clinic, Massachusetts General Hospital, Boston.

1. Coller, F. A., and Potter, E. B.: (*a*) Reaction to Iodine of Goiters from a Goiter Area, Am. J. Surg. **6**: 609, 1929; (*b*) The End-Results of Thyroidectomy, Ann. Surg. **94**: 568, 1931; (*c*) personal communication from E. B. Potter to W. O. Thompson.

2. Means, J. H.; Thompson, W. O., and Thompson, P. K.: On the Nature of the Iodine Reaction in Exophthalmic Goiter, with Particular Reference to the Effect of Iodine Late in the Course of the Disease, Tr. A. Am. Physicians **43**: 146, 1928.

3. Plummer has reported that the disease may vary not only in different parts of the country, but in the same part from time to time (Plummer, H. S.: Exophthalmic Goiter in Olmsted County, Minnesota, Tr. A. Am. Physicians **46**: 171, 1931).

only hospital cases for approximately the same period. This has been done in the upper part of chart 1. There is a tendency for the percentage of cases in the higher basal metabolism groups to be greater in Ann Arbor than in either Boston or Chicago. However, this is somewhat misleading because the average height of the

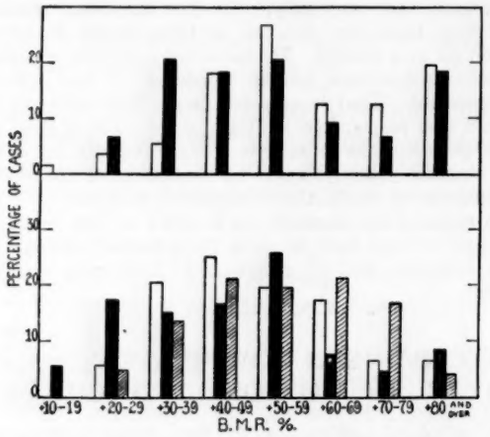

Chart 1.—Comparison of the initial height of the basal metabolism in 44 hospital cases of exophthalmic goiter in Chicago (Thompson, Thompson and Dickie: Unpublished data) with 56 hospital cases in Boston (Lerman, J., and Means, J. H.: Am. J. M. Sc. **181:** 745, 1931; Unpublished data) for the same period, 1930-1932 (upper part of chart). Also, comparison of the initial height of the basal metabolism in 133 cases in Chicago (Thompson, Thompson and Dickie: Unpublished data), 128 cases in Boston (Means, J. H.; Thompson, W. O., and Thompson, P. K.: Tr. A. Am. Physicians **43:** 146, 1928) and 128 cases in Ann Arbor (Coller, F. A., and Potter, E. B.: Am. J. Surg. **6:** 609, 1929) (lower part of chart). The majority of the Chicago cases in the lower part of the chart were not hospital cases, and the data in all three series were collected in different years. The shaded areas represent Chicago, the unshaded areas Boston and the cross-hatched areas Ann Arbor.

basal metabolism is approximately the same in all three places, as shown in chart 2. In case it should be thought that the initial height of the basal metabolism is not a reliable index of the degree of thyroid

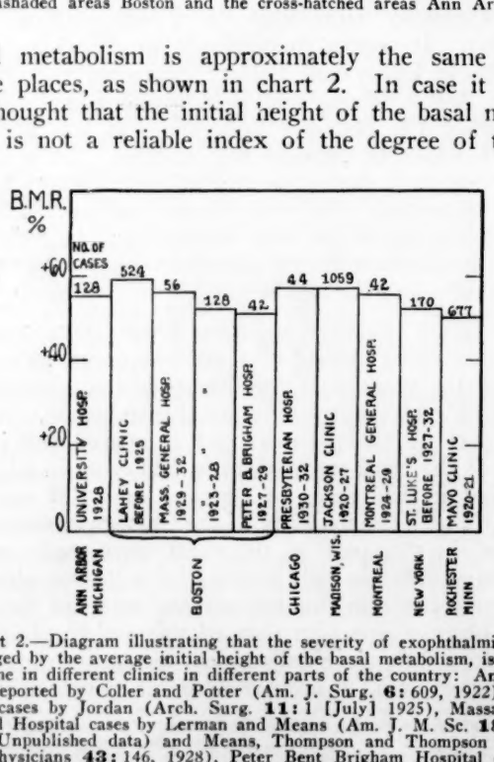

Chart 2.—Diagram illustrating that the severity of exophthalmic goiter, as judged by the average initial height of the basal metabolism, is roughly the same in different clinics in different parts of the country: Ann Arbor cases reported by Coller and Potter (Am. J. Surg. **6:** 609, 1922), Lahey Clinic cases by Jordan (Arch. Surg. **11:** 1 [July] 1925), Massachusetts General Hospital cases by Lerman and Means (Am. J. M. Sc. **181:** 745, 1931; Unpublished data) and Means, Thompson and Thompson (Tr. A. Am. Physicians **43:** 146, 1928), Peter Bent Brigham Hospital cases by Fulton and Alt (New England J. Med. **203:** 327, 1930), Presbyterian Hospital cases by Thompson, Thompson and Dickie (unpublished data), Jackson Clinic cases by Jackson (Am. J. Surg. **4:** 49, 1928), Montreal General Hospital cases by Fitzgerald (Canad. M. A. J. **16:** 159, 1926) and Rabinowitch (Canad. M. A. J. **21:** 156, 1929), St. Luke's Hospital cases by Goodwin (New York State J. Med. **29:** 1189, 1929; personal communication to W. O. Thompson) and Mayo Clinic cases by Pemberton (Boston M. & S. J. **186:** 244, 1922).

intoxication, the level in Boston and Chicago during rest may be compared in chart 3 and table 1. Similar data are not available for Ann Arbor. Regardless of how the comparison is made, the severity of the disease before treatment is started, as judged by the elevation of the basal metabolism, is certainly no greater in Chicago [4] than in Boston,[5] and from the standpoint of the *initial* height alone, appears to be no greater in Ann Arbor,[1a] Madison, Wis.,[6] Montreal,[7] New York [8] or Rochester, Minn.,[9] than in the other two cities (chart 2).

THE RESPONSE TO IODINE

The next logical step is to compare the reduction in basal metabolism during the administration of iodine. Means and the Thompsons [2] have published a report of the effect of iodine in 128 cases of exophthalmic goiter in Boston. In these cases a level of basal metabolism during rest was usually not determined before starting iodine. This factor has been controlled in a more recent series of Means and Lerman consisting of 70 cases (chart 3 [10]). About 8 or 9 cases are included in both series. In the first series the metabolic rate fell from plus 52 per cent to plus 21 per cent, and in the second series, from plus 56 per cent to plus 25 per cent, so that rest did not make much difference. In the first series there is a tendency for the lines denoting the course of the basal metabolism during

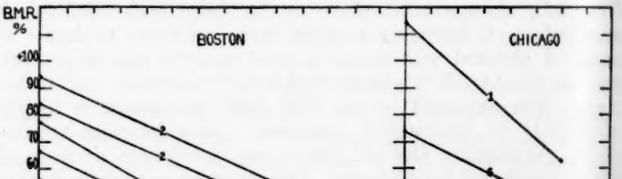

Chart 3.—Comparison of the effect of iodine on the basal metabolism in 70 hospital cases of exophthalmic goiter in Boston (Means, J. H., and Lerman, J.: Unpublished data) (left side of chart) with that in 30 hospital cases in Chicago (Thompson, Thompson and Dickie: Unpublished data) (right side of chart). In each half of the chart the points on the left denote the level of the basal metabolism during rest and the points on the right the level of the basal metabolism during the administration of iodine. The heavy black line in each series represents the average reduction in basal metabolism.

the administration of iodine to converge. In the second series the lines tend to be parallel, a tendency which may be more apparent than real because the metabolism observations were not made daily and the time required for maximum reduction in the various groups is unknown. However, if it is assumed that it was from seven to eight days for all groups (chart 4), which

4. Thompson, W. O.; Thompson, P. K., and Dickie, L. F. N.: Unpublished data.

5. Lerman, J., and Means, J. H.: (*a*) Iodin in Exophthalmic Goiter: A Comparison of the Effect of Ethyl Iodid and Potassium Iodid with That of Lugol's Solution, Am. J. M. Sc. **181:** 745, 1931; (*b*) Unpublished data. (*c*) Means, Thompson and Thompson (footnote 2). (*d*) Jordan, S. M.: Basal Metabolic Rates and Their Relation to End-Results in Thyroid Disease: A Statistical Study, Arch. Surg. **11:** 1 (July) 1925. (*e*) Fulton, M. N., and Alt, H. L.: The Comparative Effect of Different Iodine Preparations in the Preoperative Treatment of Thyrotoxicosis, New England J. Med. **203:** 327, 1930.

6. Jackson, A. S.: The Value to the Surgeon of the Basal Metabolic Rate: Conclusions Based on a Study of 3,085 Reports, Am. J. Surg. **4:** 49, 1928.

7. (*a*) Fitzgerald, R. R.: A Comparative Study of the Effect of Two Different Preparations of Iodine upon the Preoperative Basal Metabolic Rate in Exophthalmic Goitre, Canad. M. A. J. **16:** 159, 1926. (*b*) Rabinowitch, I. M.: The Effect of Iodine Treatment, With and Without Vitamins, on the Basal Metabolic Rate in Exophthalmic Goitre, ibid. **21:** 156, 1929.

8. Goodwin, G. M.: Effect of Administration of Lugol's Solution on Twelve Consecutive Cases of Exophthalmic Goiter, New York State J. Med. **29:** 1189, 1929; personal communication to W. O. Thompson.

9. Pemberton, J. de J.: The Surgical Management of Toxic Goiters, Boston M. & S. J. **186:** 244, 1922.

10. Means, J. H., and Lerman, J.: Unpublished data.

we know to be the Boston average, there is a tendency for the lines to converge. In Chicago, frequent observations of the metabolism were made in 30 unselected patients with exophthalmic goiter while they were in the hospital awaiting operation.[4] The routine was to wait until the metabolic rate reached a level (average, plus 50 per cent) during rest before the administration of iodine was begun. The metabolism was allowed to reach another level (average, plus 24 per cent) during the administration of iodine before the patient was operated on. During the whole preoperative period, basal metabolism determinations were made at frequent intervals, usually daily. These data were collected during the years 1930 and 1931 and the first four months of 1932. In table 1 and charts 3, 4 and 5 they are compared with data from Boston, Baltimore, Montreal and Ann Arbor. It may be seen that the reduction in basal metabolism during the administration of iodine is the same in Chicago as in Boston and occurred in roughly the same length of time, viz., seven days in Chicago and from seven to eight days in Boston. The reduction in Baltimore [11] was the same as in Boston and Chicago. The reduction in Montreal [7] was slightly less and that in Ann Arbor [12a] was much less. In Chicago as in Boston, there is a tendency for the reduction to be greater the greater the initial height of the basal metabolism. A similar phenomenon was observed by Coller and Potter [12a] in Ann Arbor, by Winkenwerder and McEachern [11] in Baltimore and by Fitzgerald [7a] and Rabinowitch [7b] in Montreal.

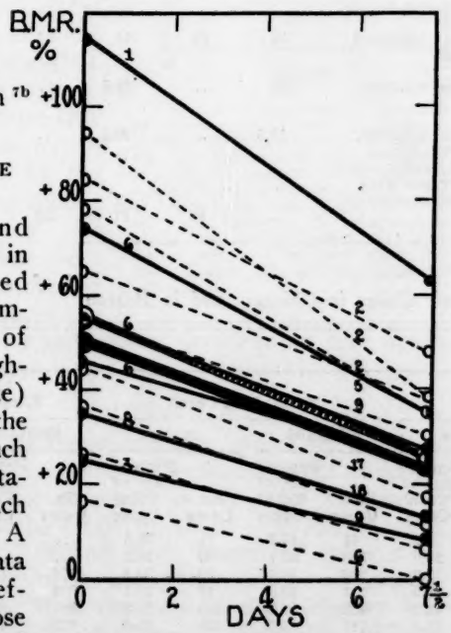

Chart 4.—Comparison of the Boston and Chicago data in chart 3, on the assumption that the maximum reduction in basal metabolism during the administration of iodine occurred in the same time in all metabolic groups for both cities. The black lines denote Chicago data and the broken lines Boston data. The heavy black line represents the average reduction in Chicago and the heavy dotted line the average reduction in Boston.

EFFECTIVE DOSE OF IODINE

Thompson and his co-workers,[12] in Boston, showed that 1 drop of compound solution of iodine daily (roughly, 6 mg. of iodine) produces on the average as much reduction in metabolic rate as much larger doses. A comparison of data obtained on the effect of this dose on 17 unselected patients with data recently collected by Lerman and Means [5b] in the same clinic on the effect of 90 minims (roughly, 756 mg. of iodine) daily on 14 patients only serves to emphasize this point (chart 6). So far, in Chicago we have collected data on the effect of 6 mg. of iodine daily on only 3 patients.[13] One showed no response and 2 showed a well marked response. Data on one of these patients are recorded in chart 7. It is impossible, of course, to make a definite statement because of the small number of cases observed. It would appear, however, that the minimum amount of iodine necessary in Chicago to produce a maximum reduction in basal metabolism may not be much different from that in Boston.

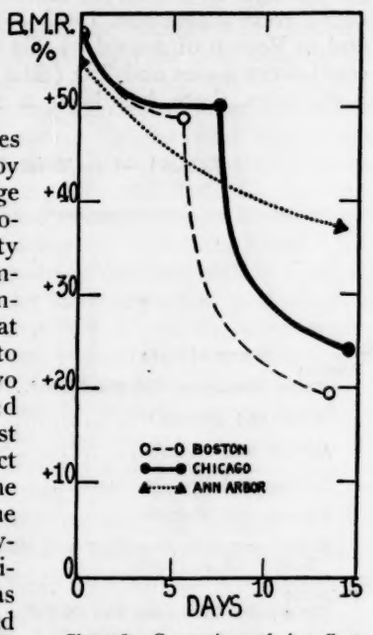

Chart 5.—Comparison of the effect on basal metabolism of 30 minims of compound solution of iodine daily in 30 hospital cases of exophthalmic goiter in Chicago with that of 90 minims daily in 14 hospital cases of exophthalmic goiter in Boston (Lerman, J., and Means, J. H.: Unpublished data). In each series the first point represents the average of the first metabolisms after admission to the hospital, the second point the average of the levels during rest, and the third point the average of the basal metabolism levels during the administration of iodine. The points have been connected arbitrarily by curved lines, as these represent the true course of the metabolism more nearly than straight lines. The average figures for the 128 cases of Coller and Potter in Ann Arbor are also shown.

THE SEX RATIO

It seemed desirable to compare the sex ratio for the two cities because it is thought by some that the percentage of males is directly proportional to the severity of the disease. Plummer [14] has made the interesting observation that the ratio of males to females at the Mayo Clinic has increased markedly in the last twenty years, an effect which he attributes to the increased severity of the disease. At the Presbyterian Hospital in Chicago, thyrotoxicosis has unfortunately been listed under three main headings, viz., exophthalmic goiter, hyperthyroidism and toxic goiter. The cases of hyperthyroidism appear to be primarily cases of exophthalmic goiter, and the cases of toxic goiter primarily cases of toxic adenoma. Toxic goiter was apparently first used as a diagnosis in 1918, and there has been a total of 188 cases, 32 in males and 156 in females. These have been excluded. The sex ratios for the cases diagnosed as exophthalmic goiter and hyperthyroidism have been combined under the heading of exophthalmic goiter in table 2, where they are compared with similar data from Boston. The combination of the cases listed under exophthalmic goiter and hyperthyroidism in Chicago seems proper, particularly in view of the fact that the sex ratio was the same in the two, whether considered by years or in toto. The total number of cases diagnosed as exophthalmic goiter was 1,131, of which 910 were in females and 221 in males. The total number of cases diagnosed as hyperthyroidism was 679, of which 533 were in females and 146 in males. The importance of a large amount of data is obvious. Thus, at the Massachusetts General Hospital for the year 1921 there were 50 cases of exophthalmic goiter, only 2 (4 per cent) of which were in males, whereas for the five year period from

11. Winkenwerder, W. L., and McEachern, D.: The Use of Iodine in the Preoperative Treatment of Hyperthyroidism; with Remarks on Iodine Remission as Observed in Baltimore, Bull. Johns Hopkins Hosp., in press.

12. Thompson, W. O.; Brailey, A. G.; Thompson, P. K., and Thorp, E. G.: The Range of Effective Iodine Dosage in Exophthalmic Goiter: I. The Effect on Basal Metabolism of the Daily Administration of One Drop of Compound Solution of Iodine, Arch. Int. Med. **45**: 261 (Feb.) 1930.

13. Thompson, W. O., and Thompson, P. K.: Recent Observations on the Iodine Reaction in Exophthalmic Goiter, Endocrinology **14**: 393, 1930.

14. Plummer, H. S.: Reported at the Meeting of the Association of American Physicians, May, 1931, with a paper entitled "Exophthalmic Goiter in Olmsted County, Minnesota" (Tr. A. Am. Physicians **46**: 171, 1931).

1920 to 1924 there were 390 cases, 64 (16.4 per cent) of which were in males. Too small a number of cases may possibly explain many of the marked differences in sex ratio reported by various observers.

It may be seen that the division between the sexes is almost the same in Chicago as in Boston, whether the cases are compared for five year periods or by totals. In Chicago of a total of 1,810 patients 367 (20.3 per cent) were males and 1,443 (79.7 per cent) females, and in Boston of a total of 934 patients, 184 (19.7 per cent) were males and 750 (80.3 per cent) females. In both cities there has been a tendency for the percentage of males to increase in recent years. Dr. Richter[15] of Chicago told us that he has had more males in his clinic in the past two years. The only difficulty with accepting this conclusion is that the ratio for the Presbyterian Hospital, Chicago, for 1902 to 1909 was higher than for any subsequent period. Here again, however, the number of cases is too small for comparison, a fact which may also explain the high ratio for the short period from 1930 to 1932. The best sex distribution for an earlier period is that given by Sattler.[16] He collected 3,477 cases reported by various observers before 1910. In his series of patients 15.5 per cent were males and 84.5 per cent females, a ratio of 1:5.44. Our figures show a somewhat higher percentage of males, but in some of our five year periods the percentage was as low as Sattler's. Dr. Lerman of Boston has reviewed our data on the sex ratio from a statistical point of view and has come to the conclusion that the apparent increase in the percentage of males in recent years is a significant one. However, so far as our own data go, we feel that more time must elapse before it can be stated definitely that the percentage of males is increasing.

TABLE 1.—*Comparison of the Effect of Iodine on Basal Metabolism in Boston, Chicago, Ann Arbor, Montreal and Baltimore*

Source of Data	Years	Number Cases	Daily Dose of Iodine	First Basal Metabolic Rate in Hospital, per Cent	Level to Which Metabolic Rate Dropped During Rest, per Cent	Effect of Iodine: Level to Which Metabolic Rate Dropped, per Cent	Effect of Iodine: Change in Metabolic Rate, Points	Effect of Iodine: Average Daily Reduction in Metabolic Rate	Effect of Iodine: Time Required for Maximum Reduction, Days
Boston:									
Means, Thompson and Thompson[2]	1923-1928	128	Usually 30 minims compound solution	52	..	21	..	...	...
Means and Lerman[10]	1928-1932	70	30 minims compound solution	..	56	25	31	...	...
Lerman and Means[5b]	1930-1932	14	90 minims compound solution	58	49	19	30	4.0	7.9
Lerman and Means[5a]	1929-1931	24	2 cc. ethyliodide	57	53	24.5	28.5	3.7	7.8
Lerman and Means[5a]	1929-1931	18	0.36 Gm. potassium iodide	65	52	23.1	28.7	4.5	6.7
Fulton and Alt[5c] (combined data on 3 series of patients)	1927-1929	42	Compound solution, calcium iodobehenate or potassium iodide	51	..	19	..	...	...
Chicago:									
Thompson, Thompson and Dickie[4]	1930-1932	30	30 minims compound solution	58	50	24	26	3.6	7.2
Ann Arbor:									
Coller and Potter[1a]	1928	128	Compound solution	55	..	37.5	..	...	...
Montreal:									
Combined data of Fitzgerald[7a] and Rabinowitch[7b]	1924-1929	42	Compound solution, hydriodic acid or iodized jecoleic acid incorporated with vitamin concentrate	55.5	..	30.5	..	...	...
Baltimore:									
Winkerwerder and McEachern[11]	....	102	.....	..	49	21	28	...	...

TABLE 2.—*Sex Ratio for Exophthalmic Goiter in Chicago and in Boston*

	Chicago												Boston			
	1,131 Cases of Exophthalmic Goiter				679 Cases of Hyperthyroidism				Total: 1,810 Cases				1,054 Cases of Exophthalmic Goiter			
	Females		Males		Females		Males		Females		Males		Females		Males	
Years	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases	No. Cases	Percentage of Total Cases
1902-1909	44	67.7	21	32.3	...	....	...	....	44	67.7	21	32.3	...	....	...	....
1910-1914	176	85.9	29	14.1	4	80.0	1	20.0	180	85.7	30	14.3	...	....	...	....
1915-1919	209	85.3	36	14.7	27	93.0	2	7.0	236	86.1	38	13.9	106	88.3	14	11.7
1920-1924	102	83.6	20	16.4	111	84.0	21	16.0	213	83.9	41	16.1	326	83.6	64	16.4
1925-1929	152	78.4	42	21.6	331	77.9	94	22.1	483	78.0	136	22.0	309	80.7	74	19.3
1930-April, 1932	227	75.7	73	24.3	60	68.2	28	31.8	287	74.0	101	26.0	115	71.4	46	28.6
Totals	910	80.5	221	19.5	533	78.5	146	21.5	1,443	79.7	367	20.3	856	81.2	198	18.8

In striking contrast to our observations are those of Coller and Potter in Ann Arbor.[1b] In 267 cases observed during the period from Aug. 1, 1925, to Dec. 31, 1929, they found 37 per cent males and 63 per cent females. During the same period they reported 273 cases of toxic adenoma, only 16 per cent of which were in males. During the year 1931, of a total of 77 patients with exophthalmic goiter, 38 were males; whereas, of a total of 142 patients with adenomatous goiter only 21 were males. Why the ratio of males to females should be so much less for their cases of toxic adenoma than for those of exophthalmic goiter is difficult to explain. We are led to wonder whether differ-

15. Richter, H. M.: Personal communication to W. O. Thompson.
16. Sattler, H.: Die Basedow'sche Krankheit, Leipzig, Wilhelm Engelmann, 1910, pt. 2, p. 612.

ences in the criteria for the diagnosis of exophthalmic goiter and toxic adenoma may not account for some of the difference between the sex ratio of Coller and Potter and our own.

THE AGE OF ONSET

On chart 8 is shown the age of onset in four groups of cases.[17] The number of cases in Chicago and Ann Arbor is too small for comparison with the other groups, and the cases in each group were observed at a different time from those in the other three. On the basis of these data, about all that can be said is that in the great majority of cases in all groups the disease began between the ages of 15 and 50. In the Ann Arbor series the ratio of males to females is greater than in any of the others and increases in the later decades, so that after the age of 40 the number of males either equals or exceeds the number of females. When it is seen, however, that there were only 66 cases in this series after the age of 40, the fallacy of stating this as a fact is obvious. In the Chicago series, there is also a tendency for the ratio of males to females to increase in the later decades, but here again the number of cases is too small to base conclusions on.

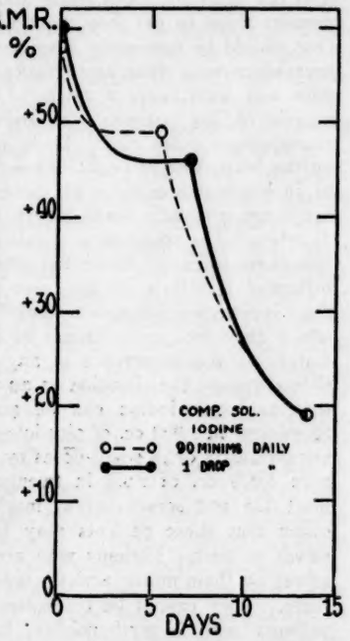

Chart 6.—Comparison of the effect of administering 1 drop of compound solution of iodine (6 mg. of iodine) daily in Boston with that of administering 90 minims (7.56 mg. of iodine) daily in the same clinic. As in chart 5, the first points represent the initial height of the basal metabolism, the second points the level during rest, and the third points the level during the administration of iodine.

COMMENT

The frequency of exophthalmic goiter in different parts of the world is unknown because it is not a reportable disease. That it occurs in all races and in all climates seems to be established, but it is also thought to be more frequent and more severe in some races and in some parts of the world than others. Moschcowitz [18] stated that it is common in the Hebrews and rare in the Negroes and Chinese. According to data from the draft board [19] of the United States army (1917-1918) the incidence was greater over the area in which endemic goiter was more common. In this area are the Great Lakes region and the Pacific northwest. Mortality statistics for exophthalmic goiter for this country would appear to support the same conclusion.[20] The mortality statistics for Great Britain [21] also suggest that exophthalmic goiter is more common in many regions where endemic goiter abounds. Plummer [3] stated that it has been recognized for years that the incidence of exophthalmic goiter is relatively high in the Mississippi Valley and the Great Lakes region, and he thought that the number of cases in the northwestern states "has progressively and periodically increased for the past fifty years." The data for the draft board [19] showed that the incidence of endemic goiter was greater in the Ann Arbor area than in the Chicago area, a fact which is of some interest in connection with the apparent difference in exophthalmic goiter between the two areas. On the other hand, there are those who feel that there is no relationship between the incidence of endemic goiter and that of exophthalmic goiter. Thus, about a generation ago Berry [22] said "Exophthalmic goitre is not an endemic disease. My own inquiries in many goitrous districts both in England and abroad point in the same direction and tend to show that exophthalmic goitre is rare in places where ordinary goitre is common and certainly is often found where ordinary goitre is unknown." McCarrison [23] said that it is "very rare in regions where goitre is endemic. Amongst the indigenous inhabitants of goitrous tracts of the Himalayas I have seen comparatively few cases in ten years." Möbius [24] recognized that it may be relatively common in regions where endemic goiter is rare. It is a common disease all along the Atlantic seaboard where the incidence of endemic goiter is low.

Much is said about the greater severity of the disease in the Great Lakes region. One of us (W. O. T.) has had an opportunity to study the disease for comparatively long periods in both places. It has been his impression that clinically the disease is no more severe in Chicago than in Boston. However, regardless of theoretical considerations, the fact remains that, judged objectively from the standpoint of the initial basal metabolism, the reduction in basal metabolism during the administration of iodine and the ratio of males to females, the disease appears to be no more severe in Chicago than in Boston.

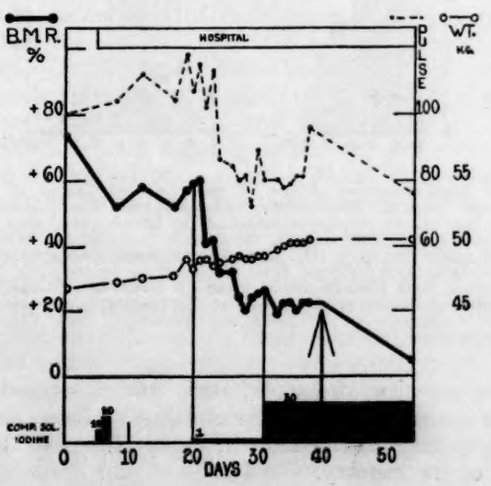

Chart 7.—Effect of administering 6 mg. of iodine daily in the form of the compound solution in a typical case of exophthalmic goiter in Chicago.

17. Means, J. H., and Richardson, E. P.: The Diagnosis and Treatment of Diseases of the Thyroid, in Christian, H. A.: Oxford Monographs on Diagnosis and Treatment, New York, Oxford University Press, 1929, vol. 4.
18. Moschcowitz, E.: The Nature of Graves' Disease, Arch. Int. Med. 46: 610 (Oct.) 1930.
19. McClendon, J. F., and Hathaway, J. C.: Inverse Relation Between Iodin in Food and Drink and Goiter, Simple and Exophthalmic, J. A. M. A. 82: 1668 (May 24) 1924.
20. Mills, C. A.: Climate as a Potential Factor in the Etiology of Exophthalmic Goiter and the Other Metabolic Diseases, Endocrinology 16: 52, 1932.
21. Campbell, J. M. H.: Geographical Distribution of Exophthalmic Goitre in the British Isles, Quart. J. Med. 18: 191, 1925.
22. Berry, J.: Diseases of the Thyroid Gland, and Their Surgical Treatment, London, J. & A. Churchill, 1901, p. 177.
23. McCarrison, R.: The Thyroid Gland, in Health and Disease, London, Baillière, Tindall & Cox, 1917, p. 195.
24. Möbius, P. J.: Die Basedow'sche Krankheit, Vienna, Alfred Hölder, 1906.

CONCLUSIONS

A comparison of exophthalmic goiter in Boston and Chicago has shown that:

1. The initial height of the basal metabolic rate is the same.
2. The reduction in basal metabolism during the administration of iodine is the same and occurs in the same length of time.
3. The minimum amount of iodine necessary to produce a maximum reduction in basal metabolism is probably about the same.
4. The sex ratio is approximately the same.
5. The age of onset is about the same.

These observations suggest that the severity of exophthalmic goiter is the same in Chicago as it is in Boston.

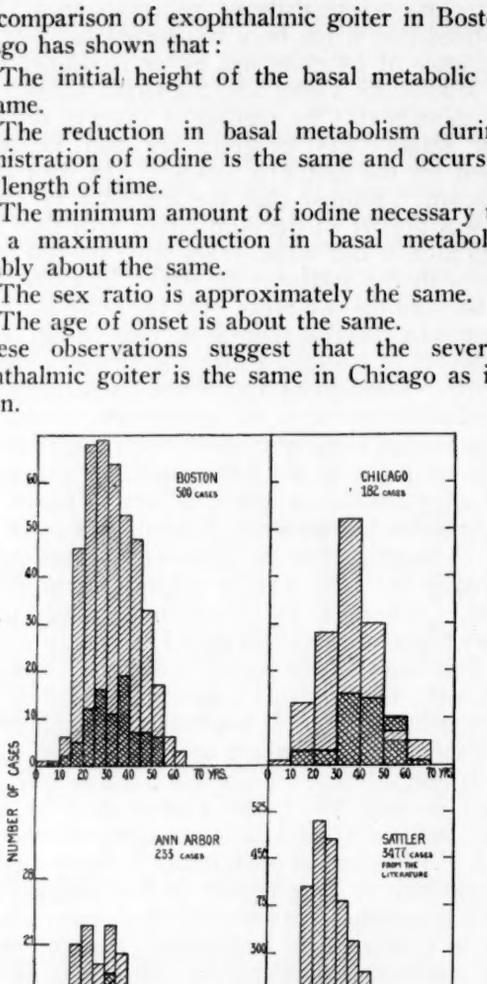

Chart 8.—Comparison of age of onset in four groups of cases of exophthalmic goiter. The double-cross-hatched areas denote males and the total height of the columns females. The Boston cases were observed during the period 1915 to 1928, the Chicago cases during 1930 to 1932 and the Ann Arbor cases (Dr. Mark Falcon-Lesses) during 1926 to 1928: Sattler's cases were collected from the literature before 1910. All data except those from Chicago are as given by Means and Richardson (The Diagnosis and Treatment of Diseases of the Thyroid, in Christian, H. A.: Oxford Monographs on Diagnosis and Treatment, New York, Oxford University Press, 1929, vol. 4).

The severity of exophthalmic goiter, as judged by the average basal initial metabolism alone, does not seem to vary significantly in many clinics in different parts of the country.

ABSTRACT OF DISCUSSION

DR. FRANK H. LAHEY, Boston: The idea that exophthalmic goiter is present in regions where goiter is endemic has not been borne out in my experience. When I left Boston last week my associates and I had operated on 10,667 goiters. Boston is certainly not a region where goiter is endemic, and a good many of these goiters, certainly a predominating majority, came from New England. Seventy-six per cent of these goiters were toxic. Of the 76 per cent of toxic goiters, 56 per cent were exophthalmic, and the remainder were toxic adenomas. One cannot depend on iodine to get these patients out of thyroid crises. We thought when iodine first was advised one could depend on it in this situation, but that is not so. If one permits these patients to progress into thyroid crises, in a majority of instances iodine, fluids, dextrose, or anything else, will not get them out. This is a practical point for physicians who are dealing intimately with these patients, and often what the physician does settles the question of life or death. The situation with patients who are threatened with thyroid crises is parallel to that of the diabetic person who is threatened with diabetic coma. If these patients show signs of going into a crisis one can keep almost all of them out of it if one does the right thing and does it promptly, but if one permits them to get into the crisis, iodine will not save them. One should be extremely suspicious of all patients with hyperthyroidism who show any irrationality. Those are the patients who will soon be in a crisis. One should be extremely suspicious of any patients who show unexplained and persistent elevations of pulse rate. Those patients are going into or are on the borderline of crisis. One should be extremely suspicious of an impending crisis in all patients who are vomiting, because dehydration rapidly leads to crisis and that is true likewise of diarrhea. The situation is parallel with that of diabetes in that infections intensify hyperthyroidism, and an alveolar abscess, follicular tonsillitis or any severe infection quickly intensifies the hyperthyroidism and throws these patients into crises from which they frequently cannot be extricated. Therefore, immediately on the occurrence of any of these suspicious signs one should regard the situation as an emergency. We have learned that as much iodine can be given as one wants to up to 50 minims in 1,000 cc. of physiologic solution of sodium chloride intravenously or in small doses by hypodermoclysis. One should give 3,000 cc. of fluid in twenty-four hours, and we give at least 125 and sometimes as much as 500 Gm. of dextrose in order that these patients may have something besides themselves to burn. Patients who are agitated will consume themselves by their motor activity unless something is done to quiet them. They cannot be controlled usually by morphine because patients with hyperthyroidism have a high tolerance for it. They can be controlled frequently by amytal, and I feel sure if that fails, tribrom-ethanol is justified and will quiet them. Iodine is of inestimable value combined with fluids and dextrose in an impending crisis, but one cannot lean on it after patients get into crises. One other point regarding iodine is that it should be determined at once whether these patients are to be treated surgically or medically. If they are to be treated medically, one can give them an unlimited amount of iodine, and can make them iodine fast, if one chooses, and do them no harm. If they are to be treated surgically, the patient should be sent to the surgeon iodine free in order that he may obtain the striking drop in the basal rate, in the pulse rate, and often gain in weight, and operate in the optimum time of improvement. One who fills them with iodine and sends them to the surgeon has lost this factor, which has materially decreased the mortality in the surgical treatment of hyperthyroidism.

DR. JACOB LERMAN, Boston: On numerous occasions, statements regarding exophthalmic goiter have come from the Middle West which could not be reconciled with the known facts of the disease as seen in Boston. Usually, these discrepancies have been explained by the statement that the disease is different in Boston. Now that Drs. Thompson and Means have shown that at least in Chicago it is the same, they have destroyed this refuge. The problem, it seems to me, is now clear. The disease should be studied by the same objective methods used by Drs. Thompson and Means in regions more goitrous than Chicago, such as Michigan. Moreover, other factors should be compared, such as the reaction to infection, the iodine content of the blood, the iodine content of the gland, the reaction to iodine alone without operation, and the development of so-called refractoriness. I should like to ask the authors whether Chicago patients can be treated by prolonged use of iodine without surgical intervention and, secondly, whether they have observed so-called refractoriness in Chicago. I have been impressed by the frequency of male patients in the last few years. There are various explanations for this fact. One is that the disease is increasing in severity. However, this is not a necessary explanation. The disease may be becoming more widespread and consequently involving males more frequently than before. Another explanation, based on recent work, was reported in part before the American Heart

Association. Dr. Means and I have shown that male patients have few and mild symptoms. In fact, they have a subdued form of the disease. Often it is difficult to convince a male patient that he is sick and requires an operation. Consequently, one may argue that as one's knowledge of hyperthyroidism and its diagnosis improves, one begins to recognize the subdued forms more frequently.

DR. HARRY B. FRIEDGOOD, Ann Arbor, Mich.: I should like to supplement this discussion with some notes on the nature of the iodine effect in exophthalmic goiter. In 1927, Cushing and Davidoff reported a case of acromegaly in which the patient had a basal metabolic rate of plus 40 per cent; he responded to compound solution of iodine in a manner similar to that which is so well known in exophthalmic goiter. During the same year Martin tried compound solution of iodine in two cases each of chronic lymphatic leukemia and polycythemia vera. Iodine had no effect in these particular instances, but he did record four cases of pernicious anemia and two cases of afebrile convalescent rheumatic fever presenting elevated basal metabolic rates in which iodine did reduce the basal metabolic rate significantly. More recently I have been interested in studying the effects of iodine in patients with leukemia, polycythemia vera and acromegaly. One ambulatory case of acromegaly showing a basal metabolic rate of plus 43 per cent and a basal pulse rate of 95 responded to iodine with a drop to plus 24 per cent and a marked decrease in the basal pulse rate to 76 a minute. Similarly, in the patient with polycythemia vera, iodine reduced the basal metabolic rate from plus 17 per cent to minus 3 per cent, with a corresponding decrease in the basal pulse rate. These experiments were carefully controlled by long periods of observation before treatment. In ten cases of chronic lymphatic leukemia in which the patients were treated under similar carefully controlled conditions, the basal metabolic rate and the basal pulse rate decreased significantly in slightly less than two thirds of the cases. These decreases in the leukemias were similar to those noted by Coller and Potter (also in Ann Arbor) in their cases of exophthalmic goiter. The patients with leukemia and exophthalmic goiter in Ann Arbor, Mich., seem to respond similarly to iodine, and quite differently from the cases Drs. Thompson and Means have just described. Unless all these observations by Cushing and Davidoff, by Martin and by myself are wholly inaccurate, it must be admitted that the iodine effect is not specific for exophthalmic goiter; and this conclusion would tend to cast some doubt on the current belief that the efficacy of iodine in exophthalmic goiter is dependent on its action within the thyroid.

DR. EUGENE S. KILGORE, San Francisco: The more carefully one questions hyperthyroid patients, the more frequently does one find mental strain or shock at the beginning of the disease. I wonder whether the war, postwar conditions, and the hectic changes in economic life may have affected males more than females, and whether this may be a factor in the apparent change in sex selection.

DR. WILLARD O. THOMPSON, Chicago: My associates and I recently published a paper on the prolonged treatment of exophthalmic goiter by iodine in which it was shown that a considerable proportion of very mild cases of the disease responded indefinitely, often until the disease disappeared. However, in all moderately severe and severe cases it was obvious that the improvement was usually either only temporary or not sufficient. We have observed, roughly, the same situation in Chicago as we previously had in Boston in that regard. In a recent paper on the development of refractoriness to iodine in exophthalmic goiter, we included some Chicago data as well as some Boston data. I should question whether the disease differs in that respect in the two cities. I have not made any observations concerning the effect of iodine on the high basal metabolism occasionally seen in conditions other than toxic goiter. However, the data available show that in exophthalmic goiter iodine produces marked changes in the thyroid and suggest that it cannot affect the basal metabolism without acting on the thyroid. Whether the thyroid is responsible for the high metabolism of leukemia and acromegaly it is impossible to say, but it is doubtful. It is probable that things other than thyroxine can affect the metabolic rate.

THE ETIOLOGY AND TREATMENT OF CHRONIC ARTHRITIS

REGINALD BURBANK, M.D.
NEW YORK

Although research workers in the field of arthritis have rightfully come to suspect the streptococcus to be a causative factor in so-called rheumatoid or atrophic-deformans arthritides, there has not been a sufficient consensus on the subject to correlate divergent findings and allow general acceptation of the streptococcus as the main etiologic factor in this widespread and disabling disease.

My own clinical and research work has steadily made me more confident that the streptococcus is the sine qua non of what is generally termed nonspecific infectious arthritis. My co-workers and I have attempted to complete the etiologic proof of this theory in every way possible and the recent experimental findings of Hadjopoulos have forcibly confirmed our original contentions.

In our early work with complement-fixation reactions in the arthritides, we regularly found antibodies against various strains of streptococci in the blood serums of afflicted persons.[1] Since the presence of an antibody presupposes the presence of an antigen, we felt sure that it would be possible to obtain positive blood cultures in such arthritic cases if an adequate technic were developed. Inactivation of the patient's native complement by means of 10 per cent peptone added to the drawn blood enabled us to obtain positive streptococcal blood cultures in from 4 to 8 per cent of afebrile arthritic patients.[2]

The blood culture strains obtained were not of virulent or pyogenic varieties, but were practically all of distinctly avirulent types that had developed the ability to live without arousing active resistance or febrile reaction on the part of the host. They were mainly mannite fermenters of infrequens and faecalis types that had the power to survive in the absence of free oxygen. They were the same low virulence streptococci that we had found in the stools of more than 90 per cent of our arthritic patients, and were similar in type to such positive joint cultures as we had obtained.

The finding of these positive blood cultures did not necessarily mean that the streptococci isolated were responsible for the arthritic lesions of the patient, so in an attempt to prove that they were culpable we injected the isolated strains into rabbits and found that we were invariably able to reproduce low grade rheumatoid joint involvement in the inoculated animals when faecalis and infrequens types were employed.[2b]

The experimental joints thus produced were not of the pyogenic type, such as may so easily be demonstrated after the injection of virulent streptococci or staphylococci into rabbits, but were all of similar type, duration and pathology to the rheumatoid findings in human beings. Many of these arthritic rabbits were killed and cultures made from the joints. These cultures injected into normal rabbits reproduced similar lesions, and identical cultures to those injected were recovered.

Read before the Section on Orthopedic Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 11, 1932.

1. Burbank, R., and Hadjopoulos, L. G.: Serologic Significance of Streptococci in Arthritis and Allied Conditions, J. A. M. A. 84: 637 (Feb. 28) 1925.

2. (a) Burbank, R., and Hadjopoulos, L. G.: A Preliminary Study Bearing on the Specific Causative Factors of Multiple Infective Arthritis, J. Bone & Joint Surg. 9: 278 (April) 1927. (b) Burbank, R.: A Study of the Streptococcus in the Etiology of Arthritis, Bull. New York Acad. Med. 5: 176, 1929.

The criticism has been made of this work that the rabbit is naturally susceptible to arthritic lesions, and that consequently the experimental production of such joints does not prove that the blood culture strains of streptococci are necessarily the causative factor in the experimental arthritis. We have never found such

Fig. 1.—Villus formation in experimentally produced arthritis, showing abnormal vascularization of the stroma.

spontaneous lesions, and Rehfuss of Philadelphia stated that in more than 1,200 rabbits carefully observed for experimental purposes he had yet to see one case of spontaneous arthritis.

Another objection still remained, and the skeptical maintained that the presence of streptococci had never been adequately demonstrated either in human arthritic joints or in such joints experimentally produced in animals. It was true that positive cultures occasionally were obtained, but there had been no uniformity of findings, and the organisms could not be demonstrated in stained sections. The theory arose that if the streptococcus was a causative agent, the actual joint involvement must be an allergic or toxic manifestation rather than a direct bacterial invasion.

As we felt sure that the disease was a systemic one, and that the symptoms were definitely caused by a direct hematogenous dissemination of bacteria, we attempted to prove the point experimentally.

The inoculated rabbits were killed by stunning at varying periods, and after shaving the hair and carefully removing the skin of the extremities, the arthritic joints were cut off in their entirety, leaving at least a quarter of an inch (0.6 cm.) both above and below the joint proper. These amputations were performed under sterile precautions and with as little injury to the joint as possible. The articulation and surrounding tissue was placed in neutral bouillon containing 2 per cent peptone and allowed to incubate for from three to six days. It was then washed in sterile saline solution and fixed in a diluted solution of formaldehyde.

Stained sections were made, and we were able to demonstrate the actual streptococci in practically all lesions associated with chronic arthritis. The pathology of these sections proved to be identical with that of lesions in the human being, and the demonstration of the hematogenous distribution of the streptococci and their direct action was traceable to the terminal blood vessels.

As control, we incubated normal joints prepared according to the same technic in bouillon cultures of the streptococcus, staphylococcus and Bacillus subtilis, and even though all these organisms could be found on the surface tissues after incubation, only the motile Bacillus subtilis was found in the deeper tissues. This organism could not possibly be mistaken for a streptococcus, and in consequence we feel that the control cultures on normal joints demonstrated the impossibility of contamination clouding the picture of streptococcal dissemination.

The morbid anatomy of our streptococcic arthritic joints in rabbits was identical both in gross lesions and histologic observations with the naturally acquired rheumatoid joints of the human subject.

Most of the pathology and the concomitant symptoms could be traced directly or indirectly to changes in capillary circulation, such as are a common finding in the course of chronic disease.

The presence of the causative micro-organism in most diseases is considered to be satisfactory evidence of the direct activity of the invading bacteria, as for example the demonstration of the gonococcus in a gonorrheal joint, whereas changes in remote tissues from which the presence of bacteria is excluded are the only ones that may be considered degenerative alterations of toxic or allergic nature.

Consequently, we feel that the demonstration of streptococci in all involved joint tissues coupled with pathology in direct relation to the actual distribution of the bacteria can be considered evidence that rheumatoid joint involvement is primarily neither metabolic nor allergic in character but definitely the result of a hematogenous streptococcal infection.

Fig. 2.—Demonstration of proliferative changes of blood vessel walls, showing the decreased lumen.

The figures demonstrate joint lesions in the exudative stage and the stage of alternate degeneration and regeneration with arthritic changes in the bone marrow, bone, cartilage and synovial tissue identical with human pathology.

They also show long chain streptococci in the synovial exudate, an abundant growth in the inner synovial layer

in short chain formation and connective tissue invasion under the lining of the synovial sac. The blood vessels themselves do not show the presence of streptococci despite the fact that the infection is hematogenous—a fact accounted for by the bactericidal properties of the blood itself.

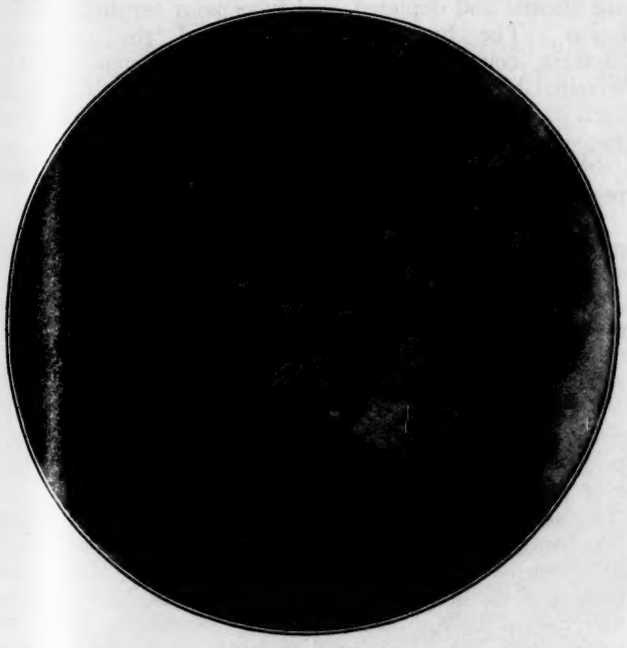

Fig. 3.—Streptococci in long chain formation in a smear of the synovial fluid.

In the bone marrow, streptococci may be found at the periphery of the zone of round cell infiltration. The organisms are also shown in the loose connective tissue framework of the terminal haversian canals.

Since cartilage is an avascular tissue, hematogenous infection would have to be from the periphery inward. The inflamed pannus tissue can be seen to be infiltrated similarly to the synovial membrane. We find streptococci following the highly vascular osteogenic tissue that invades the cartilage columns, and they are also present in the invaded cartilage cells.

SUMMARY OF EVIDENCE OF STREPTOCOCCIC ETIOLOGY FROM LABORATORY STANDPOINT

The presence of streptococcic antibodies in the blood of arthritic patients led to the search for antigens in the systemic circulation and the finding of positive streptococcal blood cultures in afebrile arthritic persons. These low virulence blood culture strains, when injected into rabbits, produced indolent rheumatoid lesions exactly comparable to those found in the human being, and the cultures made from these experimental lesions injected into normal rabbits produced similar changes in the joints and gave identical cultures. These arthritic joints, when cultured in bouillon and sectioned after staining, demonstrated the hematogenous distribution of the infection, showed the actual distribution of streptococci and definitely indicated that the actual presence of bacteria rather than any toxic or allergic action is primarily responsible for the arthritic manifestations.

RATIONALE OF TREATMENT

Since rheumatoid arthritis can be considered as a systemic disease with streptococci fed into the general circulation from areas of infection, the first necessary procedure in treatment would seem to be an attempt to find and remove active primary foci that could give a hematogenous distribution of bacteria. This removal of infective foci can be much overdone, and it may even be of no material value if the disease is of long standing because of the fact that secondary foci of infection are established in the intestinal tract and in the joints themselves.

In more than 90 per cent of our arthritic cases we have found the mannite fermenters to be the major streptococcal flora of the intestinal tract, and these organisms were nearly as actively arthrotropic as the blood culture strains were found to be.

The affected joints harbor the bacteria and it is easy to see how trauma or surgical intervention in an active case of polyarthritis can set up an acute exacerbation.

We have come to feel that in cases of acute onset with active symptoms, removal of foci can be expected to give relief or cure in many cases, but that when there has been a gradual onset and the joint involvement is of considerable duration, secondary foci have already been established, and removal of foci in such cases may give only temporary relief or no improvement whatsoever. In chronic cases, we routinely warn the patient that the removal of infection may be only of general systemic benefit and that the arthritis may not be altered by the extraction of the tooth that is infected or by the removal of the diseased tonsils.

Briefly expressed, the main active primary foci of infection are above the vocal cords while the main secondary foci are below. Prostates, gallbladders and appendexes are rarely primary foci, and the intestinal tract seems always to have its streptococcal flora primarily fed into it from above.

One of the most active and least easily eradicated sources that give secondary intestinal implant is chronic nasopharyngitis with or without active sinus involvement. This type of case shows the throat with congested anterior pillars and two red lines of inflamed mucous membrane down the nasopharynx or a chronic beefy redness of the same intensity throughout. These throats are even boggy and edematous and they are rich in streptococci which are continuously swallowed and are able to adapt their existence to the new environment in the intestinal tract.

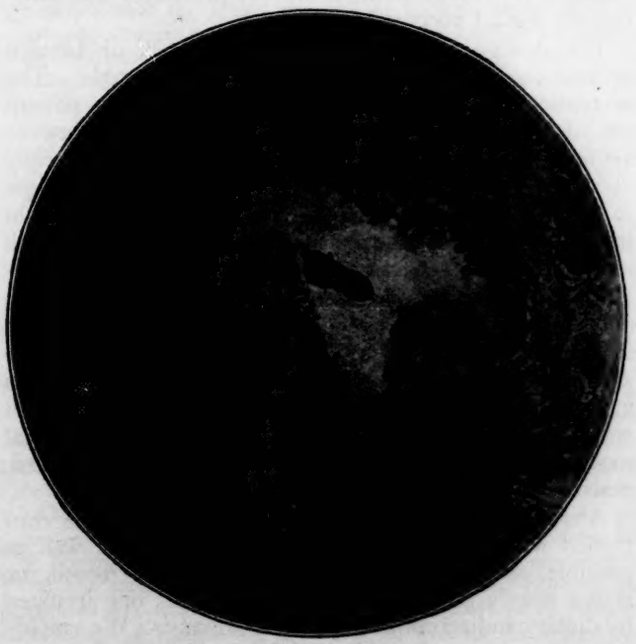

Fig. 4.—Dissemination of streptococci in the synovial lining.

When removal of foci is impossible, difficult or not desirable, the attempt should be made to prevent systemic absorption and secondary implant as much as possible. This is best done by increasing general resistance and also local tissue immunity. We have found a properly made and dosed autogenous and complement-

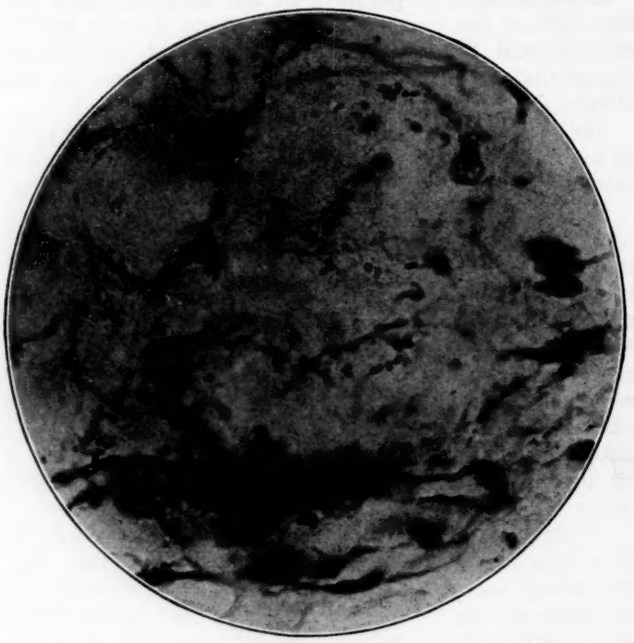

Fig. 5.—Streptococcic invasion of the deeper synovial stroma.

fixing vaccine to be the most satisfactory single measure that we have ever employed in the treatment of arthritis. Absence of complement, however, precludes the satisfactory use of vaccine.[3]

The dosage should be small, and shock or foreign protein therapy is, in our opinion, not desirable. The systemic reaction should be avoided, and if the patient has depression, malaise, an increased pulse rate or symptoms of depletion, the dosage is always radically decreased. Our usual procedure is to reduce the dose to one-tenth the last previous one if there is any doubt in our minds. With this method, we have had much more favorable general results.

For many years we have used a bacterial emulsion as a weekly or biweekly spray for the nose and throat in chronic postnasal infections. This seems to be more satisfactory as a local tissue immunizer if the bacteria are digested before diluting to make up a spray. Recent work has shown that such treatment not only gives local tissue antibody formation, but even increases systemic resistance.[4]

Absorption from the intestinal tract should be controlled with as little irritation to the intestinal wall as possible, for we feel that an intact mucous membrane is not nearly as permeable to bacteria as one irritated by dietary indiscretions or drastic catharsis. We employ saponified heart tissue lipin in capsules once or twice a week because of the selective action of this preparation on the streptococcal flora of the intestinal tract. Foods which irritate or are a fertile medium for growth of streptococci are eliminated from the diet. Properly given colonic irrigations are sometimes of material value, and the change of flora produced by acidophilus implant may be of benefit. Regular bowel movements are of the utmost importance, and nonirritant catharsis coupled with exercises to improve muscle tone are urged in all costive cases.

The majority of the patients with rheumatoid arthritis are anemic and depleted, and have poor terminal circulation. The hemolyzing powers of the infecting bacteria, coupled with the endarterial changes in the terminal blood vessels, make it necessary to give tonics such as iron and arsenic, liver and general constructive measures such as fresh air, sunshine, deep breathing exercises, vitamins and an appropriate general hygienic regimen.

Circulation is frequently much improved, and mechanical strain relieved by orthopedic measures and correction of deformities without trauma is strongly advocated. Improved posture is essential in the treatment of many of these patients, as general well-being is thereby increased, elimination facilitated, mechanical strain decreased and circulation markedly improved.

Massage, exercise and physical therapy all have their place in the reestablishment of circulation, but moderation in their use is advisable as trauma is to be avoided. Except in acute conditions of the joints, we allow exercise and massage, with the restriction that if the joints become more painful from half an hour to an hour after the exercise is finished there has been traumatization and the amount should be decreased until such increase of discomfort no longer follows the exercise or massage. We feel small amounts of exercise, either active or passive, frequently taken, to be more beneficial than any large amount at one time.

Most of the chronic cases have a low basal metabolism while the acute types frequently have an increased metabolic rate for a time. In view of this finding it

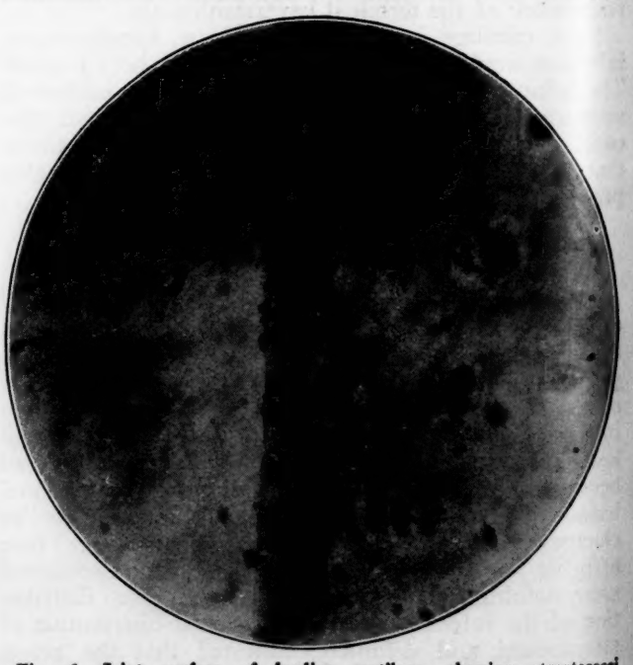

Fig. 6.—Joint surface of hyaline cartilage, showing streptococci infiltration.

is often necessary to increase metabolism when indicated, as lowered metabolic processes mean lowered general resistance. Large dosage of thyroid should be avoided when vaccine is being administered, as the two seem to be definitely synergistic in action.

We feel that the menopause may have some influence on the time of onset of arthritis, but think that this

3. Burbank, R., and Christensen, B. E.: Specific Vaccine Treatment of One Thousand Cases of Chronic Arthritis, with Results and Clinical Observations, J. Bone & Joint Surg. **13**: 246 (April) 1931.

4. Walsh, T. E.; Sullivan, F. L., and Cannon, Paul R.: Local Formation of Antibody by the Nasal Mucosa, Proc. Soc. Exper. Biol. & Med. **29**: 675 (March) 1932.

influence is due to a general lowering of functional activity during that period. Pregnancy, however, gives a marked increase in general glandular and functional activities, with a definite improvement of arthritic symptoms followed by a tendency to relapse from two to four weeks after childbirth, due to the consequent lowering of glandular activity.

Glandular preparations, other than thyroid, are used experimentally but so far have proved of little value. Parathyroid extract-Collip seems to be of advantage at times in the stabilization of calcium when coupled with sunshine, cod liver oil preparations and general hygienic measures.

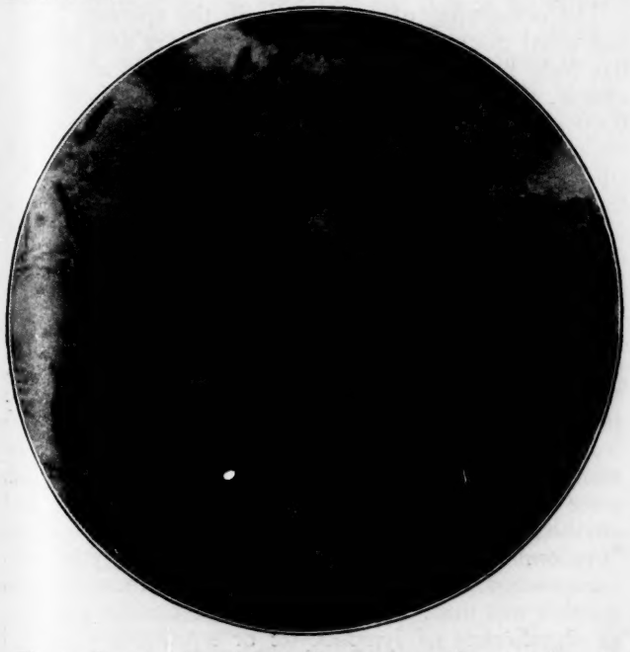

Fig. 7.—Streptococci carried into degenerative cartilage area by osteogenic tissue.

Diet is outlined in each individual case and does not follow any set routine except for a fairly uniform restriction of sweets and irritants. Our main object is to keep the patient well nourished without giving articles of food which are irritant, fertile mediums for the growth of bacteria or not easily digested.

For palliation we employ the drug that agrees best with the individual case, allowing the patient to take the smallest amount consistent with adequate relief.

SUMMARY OF TREATMENT

Owing to the systemic character of the disease, our first attempt is to prevent absorption and dissemination of bacteria from foci of infection, both primary and secondary.

The complementary titer of the patient's blood is an index to the value of vaccine. Autogenous and complement-fixing strains in dosage kept small enough to avoid reactions have been found much more satisfactory than any shock or foreign protein therapy.

Since the intestinal tract is a major secondary focus of infection, the bowels should be kept adequately open without irritation, and the attempt made to eliminate streptococci as far as possible.

Because of the circulatory dissemination of bacteria, it is essential to improve terminal circulation by means of iron tonics, general hygienic measures, improved posture and orthopedic corrections. Massage, exercise and physical therapy are also valuable in improving peripheral circulation.

Except for the use of thyroid, glandular therapy has in the main proved disappointing.

Diet, palliation of pain and general constructive measures should be individually outlined for each case.

Since the disease is definitely a systemic one, every effort should be made to keep the patient's general physical condition at par. The better the general health of the patient, the quicker and better will be the response of the joints.

ABSTRACT OF DISCUSSION

DR. ROBERT B. OSGOOD, Boston: Being neither a bacteriologist nor an immunologist, I have no right to express a personal opinion as to the entire trustworthiness, as a criterion for treatment, of the complement fixation tests for streptococci and staphylococci, which represent the indications for Dr. Burbank's methods of vaccine therapy. I am under the impression that some well known immunologists view with suspicion the dependability of such reactions in this connection. I am not quite clear as to whether Dr. Burbank includes in his considerations the hypertrophic or ostearthritic, degenerative type of chronic arthritis. I take it he does intend to include the hypertrophic type, for in a previous paper he has stated that he considers both types infective. The joint tissues of the hypertrophic type rarely show macroscopically or microscopically inflammatory processes or the changes characteristic of bacterial infection, if one is to accept the observations of most well trained, dispassionate pathologists. The manner in which Dr. Burbank has taken cultures of his whole joints would seem to be susceptible to errors of contamination. It would seem difficult to make reliable and delicate histologic differentiations on tissue which had not been fixed until after it had been allowed to undergo autolytic and bacterial actions for from three to six days by being incubated in broth. Dr. Burbank says that the finding of positive streptococcal blood cultures in from 4 to 8 per cent of afrebrile arthritic patients (a rather small proportion) and his experiments with rabbits lead him to conclude that the actual presence of bacteria rather than any toxic or allergic action is primarily responsible for the arthritic manifestations. All have been hoping for a glimpse of this promised land but to many it is still hidden by the clouds of doubt. I plead with general practitioners (who should continue to treat these patients) to seek a vantage ground from which they may look down on the many-sided citadels of chronic arthritis. The paths of knowledge by which physicians may climb to such an eminence have been clearly defined. With the view obtained from such a point they will realize the comprehensiveness of the campaign required for the successful storming of these arthritic defenses, and also how seldom they capitulate unless attacked from many angles.

DR. HENRY W. MEYERDING, Rochester, Minn.: Some years ago I was convinced that the etiology of chronic arthritis was entirely concerned with streptococci, but after I had labored along in treatment and care of patients my opinion was changed. I believe that age, metabolic disturbances, infection, and trauma must be taken into consideration. Today, school physicians are eliminating foci of infection before they have the opportunity to do great injury. This is one of the most important factors in the prevention of chronic infectious arthritis. As is well known, Dr. Rosenow has many times taken bacteria from foci of infection of human beings, has injected them into rabbits, and has produced arthritis. I am glad that Dr. Burbank has reported his work before the Section on Orthopedic Surgery regardless of whether or not we agree with all his conclusions. Certainly his slides show the presence of streptococci in the animals to which he has given injections. I have been working in conjunction with Dr. Hench, a member of the American Committee for the Control of Rheumatism, and I have removed tissue and synovial fluid from many patients. However, in very few instances have we been able to prove the presence of bacteria either in the fluid or in the tissue. That is because, I believe, we are not able to take large sections of tissue or the entire joint and break it up in culture mediums. If we had the opportunity to do that with material from human beings, no doubt we could get some bacteria in culture, but certainly not in 100 per cent of the cases.

DR. REGINALD BURBANK, New York: The physician owes it to his patient not to restrict himself to pet theories in the treatment of arthritis. The physician's main purpose should be relief of the patient, and all forms of treatment are used that may be beneficial and are known not to be harmful. There should be coordination in the field of arthritis, and I urge that workers in the field cooperate to help one another solve the problem that entails the chief economic loss in medicine. Each serious worker in this field has something of importance and of value to offer, and if the physician selects the best suggestions of each, he will certainly benefit his patients more than if he restricts himself to one single type of treatment. Dr. Osgood noted that I found a small percentage of positive blood cultures. From 4 to 8 per cent is small, but I believe that there is only transitory septicemia when some barrier of resistance is broken down and invasion of the bacteria into the systemic circulation occurs. Dr. Osgood suggests the possibility of contamination. Since the streptococcus is nonmotile, it is not able to penetrate the deep tissues. Joints incubated in active cultures of streptococci, staphylococci and Bacillus subtilis showed no invasion of bacteria except by the motile bacillus. I quite agree with Dr. Osgood that food is an important factor for many reasons, but time does not permit going into theories. I heartily agree with Dr. Meyerding's feeling on the early removal of foci of infection and have tried to stress that the earlier the removal the more satisfactory the result. I feel that the clearing up of a recent focus gives a much greater percentage of improvement than the removal of a chronic one because, in the latter, dissemination of bacteria has already occurred.

ALLERGY AND INFECTION

PRACTICAL VALUE OF CYTOLOGIC EXAMINATION OF THE NASAL SMEAR IN DIFFERENTIAL DIAGNOSIS

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AND
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Not all cases of hay fever or vasomotor rhinitis are obviously recognizable. Seasonal cases may be mild, simulating almost perfectly infectious coryzas. The vasomotor rhinitis accompanying bronchial asthma and often its possible etiologic basis may be of such identical mildness that its presence is even denied by the patient and overlooked by the examiner. Also, a single hay fever antigen, such as feathers or some house or occupational dust, may be of a chronic perennial and nonseasonal character, or a succession of pollen antigens in some climates may produce more or less chronic symptoms. Positive skin tests for determining the allergic state are not immediately or invariably secured when reasonably expected. Children with chronic vasomotor rhinitis often present the typical mouth breathing and facies ascribable to tonsillar and adenoidal hypertrophy, with failure of expected operative relief. Under certain conditions, the roentgenographic densities of vasomotor rhinitis can easily be mistaken for those of paranasal sinusitis, and even polypoid degeneration can accompany nasal edema of hypersensitivity origin. Also, the discharge in cases of nasal allergy is not invariably watery; at times it is grossly mucopurulent, so that in apparently purely infectious, chronic, nasal parasinusitis in which the usual local or surgical treatments have proved unavailing, it is always possible that allergic sensitivity may be the basis of, or a complicating factor in, the problem. This is especially true if there is an allergic heredity or a history of suggestive symptoms of hay fever, such as ocular, nasal or palatal itching, abnormal sneezing and blockage not definitely and more or less constantly unilateral, but bilateral or of an alternating unilateral character. Finally, the presence of an allergic state does not bar a coincidental chronic or intercurrent infection calling for additional appropriate treatment. Hence, any simple laboratory test that will reveal the presence of nasal allergy, infection or the two conditions combined, with any degree of consistency, is not superfluous.

The occurrence of eosinophils in the sputum, blood and nasal discharges in cases of hay fever and asthma has long been recognized, the source of which is, of course, the eosinophilic infiltration of the underlying tissues, as reported in biopsies and postmortem examinations in such cases. The purpose of the present study, a continuance of our preliminary report, was to determine the frequency with which such infiltration could be demonstrated by an examination of the nasal discharges by the simple smear method and its reliability in establishing the diagnosis of nasal allergy, and, if possible, to differentiate between nasal allergy and infection, in which the leukocyte infiltration of the tissue presumably would consist of noneosinophilic cells. As our intent has been to determine solely from these points of view the practical diagnostic value of a technic that would require only a few moments, not many complete cell counts were made; the eosinophils were reported as few (from 3 to 10 per cent), and anything above that number usually as "many" up to "predominating," the noneosinophilic leukocytic cells encountered being classified in the same manner. No attempt was made to determine the percentage presence or significance of lymphocytic or squamous epithelial cells.

Our early method of collecting the examination material by metal loops or cotton-tipped applicators and spreading directly from nose to slides was found too often to break or crush the individual cells, making identification and counting difficult in borderline cases. The best results have been obtained by having the patient employ a small cellophane handkerchief as a substitute for his own, only when there arose a natural spontaneous desire to evacuate the nasal secretions, as it was soon learned that forcibly commanded nonspontaneous blowing efforts seldom gave anything but unsatisfactory cell recovery. This point is decidedly important and will obviate many subsequent reexaminations when the initial laboratory report reads "few or no cells." Obviously, smears should invariably be secured before there is a possibility of modification by mechanical or chemical irritation through instrumental manipulation, medicated sprays or packings, and, to have any value whatsoever, they should be obtained only during periods of apparent allergic or infections activity and not during periods of quiescence. A case of feather, house dust or pollen sensitivity with definite nocturnal or early morning symptoms of considerable severity may be totally or almost totally quiescent allergically and symptom-free by afternoon after several hours of freedom from contact with the antigen, and the true state of affairs may be missed by both the examiner and the laboratorian. Another advantage of the smear method is that in this type of case valuable diagnostic material can be secured by the patient in the home; after it has been collected on a roughened cellophane handkerchief

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A preliminary report was read before the Pathology Section, Southern Medical Association, New Orleans, Nov. 19, 1931, and published in the Southern Medical Journal (25: 582 [June] 1932).

and sealed in a jar, it will remain suitable for examination for several hours. It was by this method that several of our questionable allergic cases seen repeatedly in a quiescent stage during visits to the office were made to show definite allergic eosinophilia.

Thin smears are made, dried, fixed by heat and stained with Wright's stain as for a differential blood count. We have not been able to detect any advantage in thick smears or any modifications of the stain with which we experimented. The average uncomplicated case of hay fever of moderate severity under these conditions shows a smear eosinophilia of from 40 to 90 per cent.

The subsequent diagnosis of allergy in these cases was confirmed by the report of the typical appearance of the mucosa as made by competent consulting rhinologists, by the history, familial, past and present, by positive skin tests when securable and, finally, by the satisfactory response to the usual measures to control allergic manifestations. The diagnosis of infection was made by the history, nasal examination, the presence of infections of the upper respiratory tract coincidently in other members of the family and the subsequent course of the case.

Nasal Smear Cytology Under Varying Conditions

Total number of cases studied		154
Total number of cases of nasal allergy		139
Active cases of hay fever		110
Many or predominating eosinophils (10%-95%)	76	
Few eosinophils (3%-10%)	14	
No eosinophils	20	
Positive on second examination	7	
Positive after repeated examinations	5	
Impossible to secure eosinophils after repeated examinations	0	
No subsequent discharges securable for reexamination	8	
Quiescent cases of hay fever (out of season)		7
No eosinophils	7	
Nonallergic cases used as controls (nasal infections, sinusitis, acute and chronic)		15
Pus cells and eosinophils	0	
Pus cells and no eosinophils	15	
Known nasal allergic patients with acute nasal infections		22
Many pus cells and many eosinophils	4	
Many pus cells and no eosinophils	5	
Few pus cells and few eosinophils	3	
Few pus cells and no eosinophils	10	

In considering the figures presented in the accompanying table, in not a single case classified as clinical allergy or in our intended nonallergic controls with acute or chronic infections that showed an eosinophilia of 5 per cent or over was it impossible sooner or later definitely to prove beyond question the existence of hay fever or vasomotor rhinitis, unexpectedly so in several of our supposedly nonallergic control cases. Heavy polymorphonuclear, noneosinophilic, leukocytic cell findings similarly, as might be expected, proved to be infections. When the laboratory findings intimated that the two conditions existed coincidently or alternated at different times in the same person, the clinical diagnoses finally coincided, and constant frequently repeated smears from the same patients with chronic conditions over long periods showed that such combined or alternating states existed not at all infrequently.

Our figures show an appreciable percentage of cases of hay fever immediately or subsequently diagnosable as such by other measures, in which there was no eosinophilia at the initial examination. In each of these cases, without exception, in which it was possible to secure a discharge for reexamination, the usual eosinophilia was ultimately demonstrated, showing that this, like other laboratory tests, is not infallible under any and all conditions, and that a single negative report does not exclude an allergic condition.

So far as we have been able to determine to date, the failure of the eosinophilic nasal smear tests in hay fever occurs under the following conditions: (1) during periods of allergic quiescence; (2) at times during periods of intercurrent infection; (3) in poor specimens, when the material was secured only by forcible attempts at blowing the nose; (4) in cases of extreme violence.

We were greatly surprised to note that in the extremely severe cases of seasonal hay fever, in which the patients came to the office with both nasal passages completely blocked and with constant dripping from the nose and eyes, using many handkerchiefs or towels daily and presenting the most abject picture of misery, the nasal smear test not infrequently failed us completely. In these conditions, it was often absolutely impossible by our method to secure more than minute droplets which contained no cells whatsoever, and at times there were no cells even in collected nasal drippings, in which the discharge was apparently a purely watery mucus. However, the failure of the smear test in these cases is of little moment, as the diagnosis is perfectly obvious by nasal inspection, and is easily confirmable by cutaneous tests. Similarly, in some of our cases of acute coryzas, before there was any appreciable discharge, cell recovery was too scanty to be of any diagnostic value, and subsequent examinations were required before a laboratory diagnosis could be made.

Conditions other than allergy which might by analogy produce nasal eosinophilia are chronic paranasal sinusitis, impingement, the irritation of fissures and the presence of ulceration, foreign bodies and parasites. The latter conditions should be eliminated easily by direct examination. The presence of eosinophilic infiltration in chronic nonallergic inflammatory tissue elsewhere might cause some doubt as to the specificity of this test in dealing with chronic nasal sinusitis of a nonallergic character. Certainly, however, so far as we can learn from our limited experience, such sinus infection does not per se and without concomitant allergy ever produce nasal smear eosinophilia. As stated before, we were able to demonstrate such allergy in each of our intended control cases of this character which showed such eosinophilia.

In our preliminary report, we showed two types of cases which illustrated the diagnostic value of this test. The first was a case of so-called chronic sinusitis in a patient who had been under unsuccessful local and surgical rhinologic treatment for years. When she was referred for a possible allergy, tests of the skin gave negative results; the nasal smear, however, which showed many eosinophils, led to further study from an allergic point of view, with prompt correction of the condition after the discovery and removal of the antigen. The second case was in a patient who had been successfully desensitized to pollen, in which, with a sudden recurrence of the asthma and failure of its relief by allergic measures, the nasal smear showed many pus cells and no eosinophils, leading to the correction of the asthmatic state by the addition of proper rhinologic treatment for the temporary infection.

The following cases show other situations which demonstrate the further diagnostic value of this test in routine allergic practice:

REPORT OF CASES

CASE 1.—P., a man, aged 40, was seen on Jan. 9, 1932, with severe seasonal hay fever of several years' recurrence; the etiologic factor was mountain cedar (Sabina sabinoides), the

usual pollination of which, in Texas, is from December 25 to February 10. Cutaneous tests were strongly positive. Grossly, the routine nasal smear was heavily purulent, but, on staining, it showed a 95 per cent eosinophilia. The cooperating rhinologist, Dr. A. F. Clark, who had seen this patient immediately before us, agreed to defer the antral puncture and washings almost obviously indicated by the purulent character of the discharge and the accompanying pain. The patient was placed in a pollen-free room, and the condition cleared for the time being in eighteen hours; the patient was thus spared a planned, totally unnecessary, operative procedure.

CASE 2.—Mrs. C., who had been completely preseasonally desensitized to mountain cedar, was seen on Dec. 26, 1931, with a history of violent sneezing spells, nasal blockage and a watery discharge; she complained of the usual annually recurring hay fever in spite of treatment. Routine nasal smear examination showed abundant pus cells and no eosinophils. The condition was actually an infectious coryza which cleared in a few days with appropriate treatment. There were no further nasal symptoms during the rest of her hay fever season. At the time the smear was made, the nasal condition obviously could not have been allergic rhinitis, as cases of hay fever which start with severe symptoms on the first or second day of the season do not clear up in a few days and remain clear for the remainder of the season. In this case, the nasal smear obviated unnecessary and possibly decidedly harmful specific seasonal pollen treatment.

CASE 3.—Mrs. T. was seen on Feb. 9, 1932, with a history of a "cold" of several days' duration, other members of her family being similarly afflicted at the same time. A routine nasal smear was taken as a control case for this report, as she had no past allergic history, though she was the mother of three allergic children. The nasal smear showed many pus cells, confirmatory of the acute infection, and also, to our surprise, a 5 per cent eosinophilia. To determine the significance of the latter finding, the patient was requestioned; she admitted that she had frequent nonseasonal "colds," with present and past itching of the nose and sneezing and some irritation of the facial skin. Cutaneous tests showed a strong positive reaction to orris root, and orris-free cosmetics were at once substituted. The subsequent course of the case showed the correctness of the initial laboratory diagnosis of combined infection and allergic rhinitis.

CASE 4.—Miss F. was seen in November, 1931, with a history of having been bedridden on account of bronchial asthma for the previous two years; she required inordinate doses of epinephrine daily. She gave a history also of desperate status asthmaticus on several occasions during that period, requiring additionally, at such times, several doses of morphine daily for even weeks at a time, with little or no relief. Previous competent nasal surgical treatment, courses of vaccine, diathermy and a long list of the usual procedures for controlling asthma had proved totally ineffective. The nasal smear showed an eosinophilia of 95 per cent, demonstrating, from our point of view, the noninfectious type of the asthma. Under a rigid specific and nonspecific antigen-free environment in a pollen-free room and without any further additional therapeutic measures, the asthma cleared completely in two and a half months.

CONCLUSIONS

From this small number of examinations, we feel justified in drawing the following conclusions:

1. A positive eosinophilic nasal smear of from 10 to 90 per cent is almost invariably diagnostic of allergic rhinitis.

2. A positive eosinophilic smear of 4 per cent or over is highly suggestive of allergic rhinitis.

3. Conditions such as a pure, thin, watery discharge, allergic quiescence and, at times, intercurrent infections in previously definitely proved cases of allergic rhinitis are proof that the absence of eosinophilia at a single examination does not bar allergic rhinitis.

4. The presence of abundant noneosinophilic polymorphonuclear leukocytes in the smear is practically diagnostic of infection.

5. Allergic and infectious rhinitis and sinusitis may exist coincidently or at alternate periods in the same person.

6. This simple nasal smear test, if done as a routine measure, will prove of decided diagnostic value to rhinologists and to workers on allergy.

Nix Professional Building.

BACTEREMIA FOLLOWING IRRITATION OF FOCI OF INFECTION

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NEW YORK

This work was begun as a continuation of the studies that I [1] described in 1920 in a paper entitled "Bacteriologic Studies in Chronic Arthritis and Chorea." One phase of that study was to take cultures of the blood of arthritic patients. It was found at that time that 14 per cent of fifty-six cases showed positive blood cultures of streptococci. During the development of that work it was thought that massage and manipulation of the affected joint caused germs to be thrown into the blood stream and thereby increased the percentage of positive results, and this work was begun as a check on that opinion. A careful inspection of the technic in taking the cultures showed that when large amounts of blood were added to small amounts of medium, cultures were less frequently found positive than when the blood was greatly diluted by the medium.

These two facts being kept in mind, work was started to verify, if possible, the conclusions derived from the previous work. In all, 306 new cases have been studied, of which 201 were diagnosed chronic arthritis, 13 furunculosis and the remaining miscellaneous. The foci from which cultures were taken were joints, 260; tonsils, 80; gums, 17; prostate, 6; boils, 13. In the cases presenting apparently infected tonsils, gums or prostate, positive growth of streptococci was obtained locally before they were included in the series to be tested by blood cultures. Of the 260 cultures from arthritic joints, only 18 showed growth of streptococci. In no instance was the joint fluid found positive unless manipulation was done first, and it is thought that most of the positive results were due to the bacteria in the tissues around the joints rather than within the joints. However, since aspiration was continued when the needle was withdrawn from within the joint, no accurate statement can be made. The thirteen cases of boils all showed growth of Staphylococcus aureus when cultures were made from the lesions locally. Cultures from different foci were sometimes taken from the same patient.

The present paper is a preliminary report and is concerned only with transient bacteremia following massage of foci of infection. At a later time a detailed report of the arthritis cases will be made.

The following plan was followed in taking the blood for culture:

First a specimen of blood was taken as a control without massage. After a strenuous massage of the focus, a second specimen of blood was taken. Further specimens were collected one and twenty-four hours later, and 10 cc. of blood

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1. Richards, J. H.: Bacteriologic Studies in Chronic Arthritis and Chorea, J. Bacteriol. 5: 511 (Sept.) 1920.

taken in the usual manner was distributed into ten plates containing 10 cc. of infusion agar in amounts varying from 0.5 to 5 cc. The plates were kept inverted in a moist incubator to delay drying. Drying of the plates varied from the fifth to the tenth day. Transplants were made at the first appearance of the colonies. Growth rarely appeared before the fourth day, and again it was found that positive growth was much more frequently found in dilute plates than when much blood was added.

PREPARATION OF MEDIUMS USED IN THE LABORATORY

In preparing broth, 1 liter of distilled water was added to a pound of beef heart (free of fat and chopped) and the mixture was cooked on a free flame for an hour and stirred occasionally. Then it was filtered, lost weight was adjusted, and 1 per cent of peptone and 0.2 per cent of dibasic sodium phosphate ($Na_2HPO_4.12H_2O$) were added. The broth was heated for a few minutes, and after adjustment of the p_H to 7.6 was placed in the Arnold sterilizer for an hour. After readjustment of the p_H if necessary and filtering, it was dispensed in bottles and tubes and sterilized by heating in the Arnold sterilizer for fifteen minutes, three consecutive days. To the broth thus prepared, 2 per cent of agar was added and the mixture heated in the Arnold sterilizer for forty-five minutes. The broth was dispensed in tubes for slants after the p_H had been checked. Having worked with uniform mediums and as far as possible under uniform conditions, I feel that the results obtained are reliable.

The manipulation of the foci of infection was done in the following manner:

(*a*) Joints: The tissue around the joints was massaged both superficially and deeply and then the joint was flexed and extended alternately up to the limit of tolerance for ten minutes. In no instance did this manipulation increase the disability of the joint; in fact, patients frequently felt relieved after it.

(*b*) Tonsils: Only those cases were selected that showed streptococci in direct culture. The throat was painted with 10 per cent cocaine solution and the right tonsil was massaged for five minutes with the forefinger of the right hand and pressure was made with the fingers of the left hand just under the angle of the jaw. This procedure was immediately repeated on the left side by means of the left forefinger.

(*c*) Gums: Only those cases were selected that showed definite inflammation either in the gums or at the apex of the tooth by roentgen examination. The gums were massaged and the tooth was rocked as much as possible for ten minutes.

(*d*) Prostate: Only those cases were selected that showed streptococci in the prostatic fluid following massage. The massage was done in the usual manner through the anus and was continued for five minutes.

(*e*) Boils: A time was selected just before the breaking down of the center of the boil, and the boil was gently massaged for ten minutes. On account of the recognized hazard, no boils on the head or face were selected. It was not evident that the massage increased the severity of the boil.

The results are given in the accompanying table.

Results

Foci	Number of Cases	Positive Blood Cultures After Massage	One Hour Later
Joints	260	23	1
Tonsils	80	18	6
Gums	17	3	0
Prostate	6	4	1
Boils	13	5	0

Control blood cultures were taken before massage and were all negative excepting in the case of one patient who had walked a short distance before the culture was taken, and in this case the knees were involved. In no instance did bacteremia persist for twenty-four hours, for cultures made twenty-four hours after massage were uniformly negative.

In patients with arthritis there was often a reaction of several days' duration following the manipulation of the tonsils, gums and prostate. In two patients there was a chill following the massage of the tonsils. This reaction was not more severe than frequently follows a vaccine injection, and in no instance was there increased disability for more than three days.

CONCLUSIONS

1. The very marked percentage of the positive cultures obtained immediately following the massage of the foci confirms the belief that massage does throw germs into circulation, giving rise to bacteremia.

2. Transient bacteremia is much more common than is usually considered.

3. A patient may harbor a focus of infection for many years without the development of secondary foci. Whether he does develop secondary foci or not is probably dependent on the bactericidal character of the blood.

TULAREMIA FROM THE INGESTION OF INSUFFICIENTLY COOKED RABBIT

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ORANGEBURG, S. C.

Feb. 26, 1932, I was called to see the Williams family (Negro) three miles from Orangeburg, S. C., near Caw Caw Swamp, Orangeburg County, and found a baby girl, aged 14 months, dead and six other members of the family acutely ill with temperatures ranging from 103 to 105.

According to the history, four of the children, aged 5, 6, 8 and 10 years, found a dead rabbit. They cleaned, cooked and served it for the evening meal, February 22, four days prior to the call for my aid. Three days later they were unable to walk. They staggered about, vomited, complained of a pain in the stomach, and had diarrhea.

Since the father and grandmother were not affected and there were no ulcers or glandular involvement of the axillary region, influenza was considered and symptomatic treatment instituted.

Two days later, February 28, a boy, aged 2 years, had several convulsions and died. The two had partaken of the rabbit. Three of the other children were stuporous and had temperatures of 105. The fourth, a girl, aged 8, had a temperature of 103. Apparently she was not suffering. She had this temperature for ten days and recovered without any glandular involvement. During the third week her blood agglutinated Bacterium tularense in a dilution of 1:320. A test for typhoid was negative. The Wassermann and Kahn reactions were negative.

Curtis, a boy, aged 10 years, had an elevated temperature for a week and then it subsided; after this his submaxillary glands became enlarged and a peritonsillar abscess developed, which suppurated and ruptured while he was asleep. He died during the fourth week, March 24, from abscess of the lungs and bronchopneumonia. A test for typhoid was negative. A sample of his blood agglutinated Bacterium tularense during the second week in a dilution of 1:80, and during the third week in a dilution of 1:1,280. This boy

ate the head of the rabbit, according to the other children.

Junior, aged 6, had a temperature of 105, which was reduced under treatment to 103 and gradually became normal during the second week. Forty-eight hours from the onset his left submaxillary gland became enlarged and suppurated and was lanced during the third week, without recurrence. A test for typhoid was negative. His blood agglutinated Bacterium tularense in a dilution of 1:2,560. I was unable to secure blood for a Wassermann test. The boy is apparently well at present.

Joe, aged 5, developed a conjunctivitis of the right eye and enlargement of the glands in front of the right ear and also behind the parotid and submaxillary glands along the mandible and on the right side of the neck. These suppurated during the third week. They have been lanced four times, the last time April 30; at present they are healing nicely. A test for typhoid was negative. The Wassermann and Kahn reactions were negative. His blood agglutinated Bacterium tularense in a dilution of 1:2,560 during the third week.

Mary, aged 24, said that she did not eat any of the rabbit but that she washed it. She had a temperature of 103 for ten days. The latter part of the third week her submaxillary glands became enlarged and painful and are enlarged and painful at present, May 15. Through much persuasion and coaxing, a sample of her blood was obtained and it agglutinated Bacterium tularense in a dilution of 1:640. The children state that Mary ate some of the rabbit but she denies their statement and says she only washed it.

The family is poor and illiterate but has always enjoyed good health. The members were fairly well nourished and did not show any evidence of starvation. The blood of the mother and father was negative for syphilis.

These cases are interesting because of the mode of infection. The path of entrance was through the oral cavity and I believe it was due in part to ingestion of insufficiently cooked rabbit and to contaminated hands. There were no ulcers on the hands or glandular enlargement below the clavicle.

The blood was tested at the National Institute of Health, Washington, D. C.

1 East Amelia Street.

Precocious Involution of the Thymus.—In contradistinction to these hyperthymic states are those produced in individuals by a precocious involution of the thymus. Here we have too rapid a differentiation and as a result the old-young type is produced. The individuals in this group are short in stature, the epiphyses unite early with the shaft of the bone, and with this, the characteristics of an adult are superimposed. Thus the permanent teeth come in early, though frequently in an anomalous manner. Frequently all the teeth are out of alinement. The secondary hair is early in appearance, pubic hair developing as early as the eighth or ninth year, with development of breasts and a precocious menstruation. . . . These patients are stockily built, with compact frame, and are frequently vigorous. Their blood pressures are too high, and their blood picture shows an adult polymorphonuclear count even in their childhood days. The genitals are normal in size and character. Of chief interest is their mentality. They are precocious, with much initiative, are easily aroused to anger and are resentful. They have cruel instincts and show little inhibition. Although they seem far advanced for their years while still young, yet they never seem thoroughly to mature, and become blocked in early adolescence.—Timme, Walter: Lectures on Endocrinology, ed. 2, New York, Paul B. Hoeber, Inc., 1932, p. 19.

Clinical Notes, Suggestions and New Instruments

BASOPHILIC ADENOMA OF THE PITUITARY (PITUITARY BASOPHILISM-CUSHING SYNDROME)

ROBERT C. MOEHLIG, M.D., DETROIT

Recently Cushing[1] described a syndrome associated with basophilic adenomas of the pituitary. Twelve cases were reported. As the number of recognized cases with postmortem observations are rare, I am adding another.

The syndrome is characterized by "(1) a rapidly acquired, peculiarly disposed and usually painful adiposity (in one instance representing a 40 per cent gain in weight), confined to the face, neck and trunk, the extremities being spared; (2) a tendency to become round shouldered (kyphotic) even to the point of measurable loss of height associated with lumbospinal pains; (3) a sexual dystrophy shown by early amenorrhea in the females and ultimate impotence in the males; (4) an alteration in normal hirsuties shown by a tendency to hypertrichosis of face and trunk in all the females as well as the preadolescent males and possibly the reverse in adult males; (5) a dusky or plethoric appearance of the skin with purplish lineae atrophicae; (6) vascular hypertension; (7) a tendency to erythremia; (8) variable backaches, abdominal pains, fatigability and ultimate extreme weakness."

Less constantly present are "(1) acrocyanosis; (2) purpura-like ecchymoses, whether from bruising or occurring spontaneously; (3) aching pains in the eyes, associated with slight exophthalmos, with transient diplopia, with suggestive papilledema, with dimness of vision, with subretinal exudate and retinal hemorrhage; (4) extreme dryness of the skin, with pigmentation; (5) polyphagia, polydipsia and polyuria; (6) edema of the lower extremities; (7) a susceptibility to pulmonary infections; (8) albuminuria of slight degree with occasional casts; (9) a sense of suffocation and difficulty in swallowing; (10) insomnia; (11) polymorphonuclear leukocytosis."

REPORT OF CASE

History.—Mrs. R. W. S., aged 43, housewife, referred to me by Dr. H. H. Learmont of Croswell, Mich., April 16, 1931, entered the hospital, June 11, 1931, complaining chiefly of nervousness; palpitation of the heart for eight years; spontaneous bleeding into various parts of the skin, especially the palms and the fingers; flushing of the face for four years, and intermittent joint pains for one year.

The patient's father was killed in an accident at the age of 70. He had "cardiac asthma." The mother was living at the age of 65 but was deaf. The father was short and stout, weighing about 175 pounds (79.4 Kg.). The mother was 5 feet (152.4 cm.) tall and weighed 138 pounds (62.6 Kg.). There were no brothers or sisters.

The patient had one pregnancy terminating at six months spontaneously.

Menstruation began at the age of 14 and was regular but profuse, the flow lasting from six to seven days. She was regular until nine years before I saw her, when the menopause was induced by a hysterectomy and bilateral oophorectomy for fibroids of the uterus. Why the ovaries were removed was not learned.

Tonsillectomy for chronic tonsillitis had been performed eleven years before. Nine years before, because of profuse menstrual and intermenstrual bleeding, a hysterectomy and bilateral oophorectomy were performed. Four years before, she had two sinus operations for "sinusitis" and headaches. She also passed some "bladder gravel" that year. Three years before, all the teeth were extracted.

Present Illness.—About one year after the complete hysterectomy, she became very nervous and had spells of cardiac palpitation. She also became very irritable, had emotional

From the Department of Internal Medicine, Harper Hospital. Reported at a staff conference, Oct. 16, 1931.

1. Cushing, Harvey: The Basophil Adenomas of the Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism), Bull. Johns Hopkins Hosp. 50: 137-196, 1932.

outbursts and was restless. Her sleep was disturbed. Associated with this were occasional periods of giddiness and palpitation. This situation continued without change for about four years, at which time she noticed at irregular intervals the presence of huge ecchymoses making their appearance, apparently without cause. These cleared readily and then appeared elsewhere, a brownish pigmentation remaining.

About three years before I saw her she noticed bright blood oozing from the skin without finding any apparent bleeding point. The bleeding always stopped spontaneously. Cuts and bruises always healed normally. She bruised very easily with the slightest trauma. One year before, she noticed a peculiar flushing of the face accompanied by severe headaches of a throbbing character, especially over the left frontal and temporal areas. At this time Dr. Learmont found her blood pressure as high as 230. Associated with this were dizziness, blurring of vision, and the appearance of yellow spots before the eyes.

Fig. 1. — Patient with pituitary basophilic adenoma. The masculine appearance, marked hirsutism and prominent eyes may be noted.

One year before, her skin became very dry although she occasionally perspired and she noticed an excessive growth of hair over the face and other parts of the body, particularly the arms, legs and abdomen. At about this time she noticed fleeting, multiple joint pains, all the joints being involved at one time or another although there never was any redness or swelling; the sacro-iliac region was most painful. There gradually developed, during the later months, a peculiar crawling sensation in the skin, first of the arms, then the scalp and later all over the body. This acroparesthesia was quite troublesome. Her weight remained stationary all through her illness, although weakness and fatigue became a part of the picture. She had excessive thirst with polyuria for about four years; however, sugar was not found in the urine. Her appetite was very good, so much so that she was "always hungry." Dyspnea had been present for one year, coming on while asleep and causing her to sit up in bed in order to breathe comfortably.

Physical Examination.—One was immediately impressed with the masculine facies (fig. 1), the plethoric livid appearance of the face and the beard. She was exactly 5 feet (152.3 cm.) in height and weighed 138 pounds (62.6 Kg.), with the adiposity largely confined to the face, neck and trunk. Her hands and feet were remarkably small, giving one the impression of belonging to a child; she wore a size 2½ shoe. The hair of the scalp, as well as that of the eye brows, was thick and black. The eyes were very prominent but she did not show the von Graefe, Moebius or Stellwag signs. The pupils reacted normally. There was a slight tremor of the tongue. The thyroid gland was enlarged and nodular on both sides. The heart was enlarged to the left, but no murmurs were heard. The second aortic sound was accentuated. Her blood pressure was 190 systolic, 100 diastolic, at the office and 170 systolic, 104 diastolic, at the hospital. Her pulse was 140 at the office and 96 on admission to the hospital. The abdomen was moderately distended, with a low median laparotomy scar; purplish striae were present on both sides of the abdomen. She had marked tremor of the extended fingers. The reflexes were normal. There were present several large (10 cm.) brownish, shiny, pigmented areas over the thighs and chest and arms. The skin was dry and scaly.

We had an opportunity of observing the ecchymoses develop on the thighs, legs and arms during her postoperative course at the hospital.

Laboratory Studies.—The Wassermann reaction of the blood was negative on two examinations.

There was a trace of sugar in three specimens of urine out of twelve examined. No albumin was observed at any time.

The blood calcium was 12 mg., April 16; 9.98 mg., June 12, and 10.8 mg., June 24.

The blood sugar was 0.200 mg. per hundred cubic centimeters, June 13; 0.160 mg., June 22, and 0.222 mg., June 24.

The nonprotein nitrogen was 27.3 mg., June 13, and 40 mg., June 24.

The platelet count was 428,000 per cubic millimeter, June 22.

The blood volume was 53 cc. of red blood cells per hundred cubic centimeters, June 13 (the normal for women being from 35 to 46 cc.).

The bleeding time was two minutes.

The clotting time, April 16, was three and one-half minutes; June 12, two and three-fourth minutes.

The blood count, June 11, was: hemoglobin (Sahli), 106 per cent; erythrocytes, 6,640,000; leukocytes, 11,800; polymorphonuclears, 70 per cent; large lymphocytes, 27 per cent; mast cells, 3 per cent.

The blood count, June 13, was: hemoglobin (Sahli), 102 per cent; erythrocytes, 6,850,000; leukocytes, 14,100; polymorphonuclears, 73 per cent; large lymphocytes, 27 per cent.

The basal metabolism, April 17, was plus 31 per cent; June 12, minus 1 per cent.

Roentgen examination of the skull and sinuses showed that all the cells and sinuses were pneumatic, with distinct outline. In the lateral film there was noted a normal sella and no evidence of increased intracranial pressure.

Operation and Result.—Since the goiter symptoms were so marked, it was felt that the adenomatous gland should be removed, with realization, of course, that there was a polyglandular disturbance. June 13, two days after admission, a progress note stated that the patient showed marked hyperpituitary symptoms, hirsutism, polycythemia, polyphagia, hypertension; this followed oophorectomy.

Fig. 2.—Section of tumor showing rapidly growing basophilic papillomatous adenoma.

The patient was preoperatively prepared with insulin and orange juice and on June 15 a subtotal thyroidectomy was performed by Dr. Ballin. The straight muscles were spread in the midline. The neck was very fleshy. Both thyroid lobes were about twice normal size and very hard, in places reminding one somewhat of Riedl's type. A bilateral subtotal lobectomy was done. Microscopic examination revealed thyroid adenoma.

June 18, when the first dressing was done, ecchymoses were noted in the flaps and had extended downward on the chest for about ten inches. June 20, large ecchymoses were noted on the right elbow, both thighs and the legs. June 22, the patient had a convulsive attack with movements of both arms and legs.

This lasted about five minutes. From this time on a psychosis developed with marked mental confusion. She continually moved her arms and legs, so that restraint was necessary. During this time many ecchymotic spots appeared on the trunk, legs and arms. No fever occurred at any time except on the day of her death. The pulse, however, remained around 120; the blood pressure was 148 systolic, 98 diastolic.

The possibility of cerebral hemorrhage was considered but no paralysis was noted. Insulin was given on several occasions without benefit. The patient died, June 30, sixteen days after the operation, in coma and with symptoms of myocardial failure.

Necropsy.—The postmortem was unfortunately limited to the head. The brain surface and meninges showed no exudate of hemorrhage. The pituitary body was symmetrically enlarged, 1.75 by 1 cm., and on cut section showed a small circumscribed area of whitish gray tissue about 2 cm. in diameter (adenoma). Microscopically there was a diffuse adenomatous hyperplasia of the pituitary body including both the basophilic and the eosinophilic elements. In one area of the anterior lobe was a rapidly growing basophilic papillomatous neoplasm (fig. 2). Bone from the skull appeared normal.

SUMMARY

A woman, aged 43, had pituitary basophilic adenoma (fig. 2), verified post mortem, with adiposity confined largely to the face, neck and trunk; vascular hypertension; hyperglycemia; purpura-like ecchymoses with spontaneous bleeding into the skin; polycythemia; leukocytosis; multiple joint pains; marked hirsutism with a livid countenance and masculine characteristics; small stature (5 feet) and small extremities; polyphagia and polydipsia; occasional edema of the extremities; dry skin; acroparesthesia; dyspnea with choking; vertigo and blurring of vision; insomnia; headaches; nervousness and palpitation of the heart, and increased basal metabolism. Symptoms came on after a bilateral oophorectomy and hysterectomy performed nine years before.

An operation for a toxic adenomatous goiter accompanying this condition was found necessary. Death occurred sixteen days later with psychosis and symptoms of myocardial failure.

Of further interest is the acroparesthesia which has been shown by Borak [2] to be of pituitary origin and found in acromegaly and other hyperpituitary conditions.

The essential features of pituitary basophilism, as described by Cushing, are presented by the case.

Elsewhere Dr. Gaylord S. Bates (surgical resident) and I are reporting the pituitary influence on erythrocyte formation and this case forms a part of that article.

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ADDISON'S DISEASE AND PREGNANCY

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Much has been written about Addison's disease, especially during the last two years, but with the exception of the work of Pfiffner and Swingle [1] in producing the cortical extract, little knowledge has been added to the original contribution of Addison in 1855.

A search of the literature does not record an instance in which a patient with Addison's disease has gone through a full term pregnancy, but there was an article [2] referring to this subject, in a Spanish journal.

Besides the complication of pregnancy, the case that I am reporting has several interesting features: (*a*) It comes within that interesting and exclusive group of patients living longer than five years. Greene, Rowntree, Swingle and Pfiffner [3] report a collection of eleven cases in which the patients lived longer than five years, and from the Mayo Clinic comes a report [4] of two patients living ten and thirteen years. The average expectancy of the tuberculous type is thirteen months and of the atrophic type sixteen months. The tuberculous type constitutes about 80 per cent. (*b*) In pregnancy there is an hypertrophy of the cortical portion of the suprarenals.[5] This patient, of the atrophic type, was apparently benefited by the pregnancy. It has been stated that one can live on only one tenth of a gland.[6] (*c*) Victims of Addison's disease are especially susceptible to infection and trauma (the suprarenal glands play an important part in shock and infection), but this patient went through the delivery and puerperium normally.

REPORT OF CASE

Mrs. M. T. R., aged 33, was the mother of two living children, the youngest being 9 years old. Both labors were normal. Her health had always been good until 1925, when she began losing weight, strength and appetite, her skin became discolored, and she had a vaginal discharge. She then consulted me and was treated for ulcerated cervix. At the time of my next examination, in 1926, asthenia and anorexia had progressed, and the pigmentation of the skin was very pronounced. The blood pressure was 100 systolic, 80 diastolic. The total red blood cell count was 4,310,000 and hemoglobin 82 per cent. The urine was normal. She also had an erosion of the cervix, which was treated successfully by cautery. The patient was then told that she had Addison's disease. Her condition gradually grew worse, and in 1927 she consulted a prominent internist, who called two other physicians in consultation. They concurred in the diagnosis of Addison's disease. The hospital record at that time stated that she had asthenia, anorexia, pigmentation of skin and mucous membrane, hypotension and considerable gastro-intestinal disturbance. The heart and lungs were normal. Laboratory examination revealed the urine normal except for occasional hyaline casts. The blood nitrogen was normal. There was secondary anemia. The metabolic rate was plus 15. There was hypo-acidity of the stomach. Roentgenograms of the gastro-intestinal tract, chest and kidneys gave normal results. Several abscessed teeth were shown.

The patient was put on the Muirhead treatment but steadily grew worse. The case was considered hopeless and the family so advised. They insisted on her dismissal from the hospital, and the patient was allowed to be taken home. For the next eight months she was bedridden, was under the constant care of a nurse, and suffered with continuous nausea and vomiting. The weight decreased to 77 pounds (35 Kg.). The treatment consisted of whole suprarenal gland by mouth, and tonics. During the next two years her condition slightly improved. In 1931 she began taking cortical hormone by mouth and after a short time there was a noticeable improvement in her appetite and strength. About three months later she became pregnant and at the fifth month again consulted me. She stated that with the exception of a few weeks of slight nausea she had felt better than in years. The heart and lungs were normal. The blood pressure was 102 systolic, 65 diastolic. The urine was normal. The tuberculin test (Pirquet) was negative. The color of her skin seemed to be lighter, and her strength was improved. Roentgenograms of the chest and suprarenals were negative.

March 27, 1932, she entered the hospital in the first stage of labor. Her general condition was good. The temperature was 97.8, pulse 80 and blood pressure 108 systolic, 65 diastolic. The laboratory report showed the urine to be normal, blood urea 8 mg. per hundred cubic centimeters and blood sugar 87.5 mg. per hundred cubic centimeters. There was pronounced bronzing over the entire body, with a deeper coloring beneath the breasts and over the lower part of the abdomen and the perineum. After a normal labor lasting six and a half hours, under sodium amytal and gas anesthesia, she was delivered of a girl baby weighing 7 pounds (3,175 Gm.). There was a tear of the cervix (old scar tissue) which bled profusely and was controlled by sutures. No evidence of shock was shown at the time of delivery, but about four hours later she became weak and slightly nauseated. Cortical extract was given subcu-

2. Borak, J.: Ueber den Ursprung der Akroparästhesien, Endokrinologie **5**: 9-28 (Oct.) 1929.

1. Swingle, W. W., and Pfiffner, F. F.: An Aqueous Extract of the Suprarenal Cortex Which Maintains the Life of Bilaterally Adrenalectomized Cats, Science **71**: 489-490 (May 9) 1930.

2. Haro Garcia, F.: Med. ibera **2**: 391 (Oct. 10) 1931.

3. Greene, C. H.; Rowntree, L. G.; Swingle, W. W., and Pfiffner, J. J.: Metabolic Studies in Addison's Disease, Am. J. M. Sc. **183**: 1 (Jan.) 1932.

4. Ball, R. G., and Landsbury, J.: Further Observations on Addison's Disease, Proc. Staff Meet. Mayo Clin. **6**: 77 (Feb. 11) 1931.

5. DeLee, J. B.: Principles and Practice of Obstetrics, p. 107.

6. DaCosta, J. C.: A Handbook of Medical Treatment **2**: 82.

taneously and repeated in four hours. The following day she began taking cortical hormone by mouth. She remained in the hospital twelve days, during which time her temperature was normal and her blood pressure ranged from 108/70 on the third day to 95/70 on the day of discharge. She was not permitted to nurse the baby. The pathologist reported that the placenta was flat, yellowish-green pigmented and highly hyalinized.

The patient came to my office after six weeks for examination. She stated that she felt stronger and had a good appetite. The blood pressure was 90/70. On examination three and a half months later the pigmentation seemed possibly a little less, but the black spots on the gums were larger. Her blood pressure was 90/70. Vaginal examination showed a cervical discharge and erosion. She said she felt stronger and had resumed her normal activities. She had been taking cortical hormone by mouth regularly and stated that if she discontinued this for a few days she at once noticed the ill effect.

TULAREMIC PNEUMONIA

LOUIS L. TUREEN, M.D., ST. LOUIS

Permar and MacLachlan,[1] in December, 1931, reported a case of tularemic pneumonia and pointed out the grave prognosis of this condition. They state that 36 per cent of all fatal cases of tularemia reported had evidence of pulmonary involvement, either clinically or on postmortem examination. Of the eight cases which came to autopsy, seven showed pulmonary tularemic lesions, five of these being a diffuse pneumonic involvement. The pathologic lesion of tularemic pneumonia, as described by Permar and MacLachlan, is characterized chiefly by interstitial and alveolar necrosis, the basis of which apparently is arteriolar and venous thrombosis of the smaller caliber vessels. In detail, the lesion is one of intense acute inflammation, involving the interstitial tissues, the subendothelial layers and adventitia of the smaller vessels, and the alveolar spaces of the lungs. This is characterized by extreme edema with much fibrin and a cellular exudate chiefly of mononuclear leukocytes. The edema in the venules and arterioles produces a narrowing of the lumens, which is followed by thrombosis, and this vascular obstruction accounts for the widespread necrosis observed. The cellular elements of the exudate in the interstitial tissues and blood vessels consist chiefly of plasma cells, while those of the exudate in the alveoli are large fat containing, phagocytic mononuclear cells. The bronchial tree is affected, especially in its finer branches. The exudate is like that of the alveoli and the necrosis of the mucosa seems to be an extension from the interstitial necrosis. The larger bronchi and blood vessels appear to be minimally affected, if at all. This picture is said to be almost pathognomonic of tularemic pneumonia, and the necrotizing features of the pathologic process are suggested as a basis for the grave prognosis associated with the lesion.

The case reported here is an instance of widespread tularemic pneumonia, associated with pleural effusion, in which the patient made a complete clinical recovery.

An engineer, aged about 54, was first seen at his home by Dr. Albert E. Taussig, Dec. 6, 1931, complaining of chill, fever, slight unproductive cough and considerable prostration. He had been hunting a few days prior to the onset of his illness, became wet, and the following night began to cough and had a chill. At this time physical examination of the chest showed a minimal amount of impaired resonance at the right base and the breath sounds in this region were accompanied by inspiratory râles, some of which were heard also at the left base. The heart was not enlarged and there was a soft systolic murmur over the precordium. The white blood count was 14,000 and the differential showed a marked shift to the left. The temperature ranged between 102 and 104 F. daily, and the pulse was comparatively slow, about 80 per minute. Toward the end of his first week of illness he began to bring up some tenacious, purulent, slightly blood-tinged sputum, which on examination showed no acid fast organisms. The condition continued unfavorably; he became steadily more dyspneic and cyanotic and the cough was harassing and productive. December 15, he was admitted to St. Mary's Hospital in St. Louis. At no time prior to his admission were the chest conditions definitely indicative of pulmonary consolidation. The diagnosis on admission was that of bronchopneumonia. Examination in the hospital presented this picture: The patient was somewhat stuporous with a tendency toward delirium. The facies was flushed and respiration was short and rapid. On percussion of the chest, the lower two thirds of the right lung showed a definite dulness of resonance. The breath sounds were tubular in character at the right base and there were numerous crackles over the left base. Earlier in the day, even these observations were not quite so evident. The abdomen was markedly distended and tympanitic; the pulse was rather rapid, with heart sounds as before. Laboratory results were as follows: white blood count, 11,700; differential: staff cells, 17 per cent; segmented granulocytes, 50 per cent; lymphocytes, 28 per cent; mononuclears, 3 per cent; basophils, 1 per cent; eosinophils, 1 per cent.

The following morning, on close examination of the patient, a lesion was found on the lateral portion of the right middle finger, about one-half thumb nail in area and discolored by extravasated blood. There was no ulcer, just an eschar. No lymphangitis or axillary adenitis or tenderness was present. On further questioning, the patient stated that while hunting he pricked his finger on a briar and subsequently skinned his rabbits, one of which he thought was spoiled. With this additional history, tularemia was immediately thought of and blood was sent to the city and public health laboratories for agglutination tests. The following day the eschar of the finger came away and left a punched out ulcer with clean edges and no exudate. A clear serum exuded from this ulcer. In the meantime, the patient continued to become worse; the toxicity was extreme, the abdominal distention added to his embarrassed respiration, and the cyanosis became marked. An oxygen tent was resorted to and be became quite comfortable in it, but whenever the tent was removed he would turn an ashen gray and gasp for air. His temperature at this time ranged between 103 and 104 F., and his pulse was comparatively slow, about 80 per minute. The urine showed some albumin and many casts, with an occasional leukocyte and red cell. The blood picture continued about the same; i. e., a slight leukocytosis with a marked infectious picture. A roentgenogram of the chest showed a complete consolidation of the lower two thirds of the right lung. The diagnosis of pneumonia, possibly due to tularemia, was made. When the report from both the city and public health service laboratories stated that there was complete agglutination of the blood serum with B. tularense in 1:320 dilutions and almost complete agglutination in dilutions of 1:640, the diagnosis of tularemia was certain. There was also partial agglutination in low dilutions of blood serum with Bacillus typhosus and none with Brucella abortus. Sputum culture gave type IV pneumococcus.

After a stormy period, the patient gradually improved; the temperature continued at a slightly lower level. The patient brought up bright red blood on several occasions about a week after admission to the hospital. December 21, almost three weeks after the onset of his illness, examination of the chest showed the percussion note of the right lower half of the lungs to be almost flat, and there was a suggestion of a Grocco sign on the left. A thoracentesis was done, December 25, in the ninth intercostal space in the anterior axillary line and 500 cc. of straw colored turbid fluid with a sanguineous tinge was removed. Microscopic examination of this fluid showed numerous red cells with the leukocytes consisting of 69 per cent lymphocytes and large mononuclears combined, there being a fairly large number of the latter. No organisms were observed in the stained specimen. December 26, the patient was again tapped and 1,000 cc. of fluid was removed. This time the sediment showed virtually only lymphocytes and large mononuclear cells. The fluid agglutinated Bacterium tularense in dilutions of 1:1,280. At the third tapping, December 31, 500 cc. of fluid was removed. By this time the temperature was down to about 99.5 or 100. The patient was subjectively quite comfortable. Jan. 6, 1932, the patient had a chill, and the temperature rose to 102.5 by mouth. There were no physical signs and no elevation of the white blood cell count; the last previous one, December 21, was reported to be 9,800. Another thoracentesis, January 6, resulted in the removal of 100 cc. of straw

1. Permar, H. A., and MacLachlan, A. W. G.: Ann. Int. Med. 5:673 (Dec.) 1931.

colored fluid, which coagulated completely within five minutes after removal from the chest. At the final attempt at thoracentesis, January 10, no fluid was obtained. Physical examination at this time showed impaired resonance over the entire right half of the lung; breath sounds were diminished. The patient's progress was satisfactory. There were one or two days of rise of temperature to 100 or 100.5 before the patient was discharged, January 17, in good physical condition. The ulcer on the finger had completely healed. A diagnosis was made of tularemia, tularemic pneumonia, pleurisy with effusion, fibrous pleuritis and chronic myocarditis.

The agglutination test was repeated on the blood toward the latter part of the patient's stay in the hospital and was complete in dilutions of 1:1,280. The patient's progress since his discharge has been one of slow but gradual recovery of health and strength. At this time, however, three months after the onset of his illness, he cannot walk a full city block without becoming exhausted. Examination, March 9, still showed some impaired resonance over the right lower half of the lung, feeble breath sounds and no râles, pointing to the persistence of a thickened pleura. The heart tones were distant and there was a soft systolic murmur. Blood pressure was 140 systolic and 70 diastolic.

The clinical course of Permar and MacLachlan's case was quite similar to that of ours in that the picture for two weeks was clinically one of a bronchopneumonia without any localized signs until late in the course of the acute illness. There also was a history of contact with rabbits, but in their case there was a total lack of local ulcers or lymphangitis, though definite axillary adenitis was present. The diagnosis of tularemia was not made until the seventeenth day, the day of the patient's death, by report of the positive agglutination of the serum for Bacterium tularense. The chief points of interest in our case are these: The picture was clinically that of pneumonia with an extreme toxicity. The diagnosis of tularemia was not made until its possibility occurred to us and the agglutination test was made. There was a serous pleurisy, resulting in a chronic fibrous pleuritis; and the clinical recovery has been complete though slow.

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CHVOSTEK'S FACIALIS SIGN IN NEW-BORN INFANTS

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CINCINNATI

The age incidence of infantile tetany or spasmophilia is often stated as from about 6 months to 2 years. Recent reports have shown that it can occur in the first few months of life, and several instances have been recorded in new-born infants.[1] In the diagnosis of some of these, much significance has been given to Chvostek's facialis phenomenon.

It is well known that the facialis sign may occur in older children who have no spasmophilic symptoms and whose blood calcium and electrical reactions are within normal limits. It should be emphasized that this is true also in the early weeks of life. In fifty-five apparently normal new-born infants, we[2] found that the facialis sign could consistently be obtained. In one of these infants the blood calcium was 7.3 mg. per hundred cubic centimeters; in 4 it was between 8 and 10 mg., and in the remainder between 10 and 12 mg. Electrical reactions were obtained in fifteen of them and in all were normal.

The diagnosis of infantile tetany should not be made in the early weeks of life on the basis of a positive Chvostek's facialis sign; there should be the further proof of a lowered blood calcium or the electrical reactions characteristic of the condition.

From the Department of Pediatrics, University of Cincinnati College of Medicine, and the Children's Hospital Research Foundation.

1. Kehrer, E.: Die geburtshilflich-gynäkologische Bedeutung der Tetanie, Arch. f. Gynäk. **99:** 372, 1913. Bass, M. H., and Karelitz, Samuel: Tetany Accompanied by Hyperpyrexia and Vomiting in the First Days of Life, J. A. M. A. **97:** 1372 (Nov. 7) 1931. Shannon, W. R.: Generalized Edema in Association with Tetany of the New-Born, Arch. Pediat. **46:** 549 (Sept.) 1929; Tetany, Generalized Edema and Cerebral Compression in the New-Born, ibid. **48:** 153 (March) 1931. McGavran, E. G.: Spasmophilic Tetany in the New-Born, J. A. M. A. **99:** 115 (July 9) 1932.

2. Stevenson, F. E.; Mitchell, A. G., and Koch, C. A.: Chvostek's Facialis Sign in New-Born Infants, Am. J. Dis. Child. **34:** 425 (Sept.) 1927.

FOREIGN BODY IN THE BRAIN

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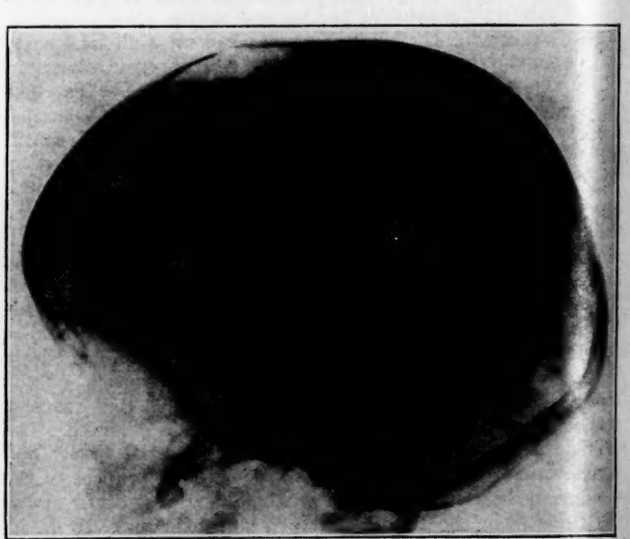
This case is presented because it is not infrequent for children to run with various objects in their mouths, and in this case an accident that gave few early symptoms caused death.

J. K., a boy, aged 34 months, while playing in the living room at his home, ran across the room with a hard wood penholder in his mouth. He stumbled and fell, and all of the penholder was found except 1⅞ inches. The child was apparently only frightened; but he was taken to the hospital, where he was roentgenographed because the mother thought he must have swallowed the missing piece of penholder.

The roentgenograms of the chest and gastro-intestinal tract gave negative results. Physical examination was negative except for a small lacerated wound in the palate, just above the right tonsil, and a bad cold that the baby had had for several days. The child seemed to improve and was seen again on the third day. The cold was better, and he had been taking some food. We thought that the throat was doing nicely.

On the fifth day the child became more irritable and was seen at the office, and after a digital examination of the post-



Penholder in brain.

nasal space, which showed nothing, the child vomited some prune colored fluid. The examination was repeated a short time later, with negative results.

The child became more and more restless and was unable to sleep unless he had some sedative. He was beginning to have a little intermittent fever. He wanted to be held all the time. Finally he was never comfortable except when he had large doses of a nerve sedative or when his mother held him and drove in an automobile.

The examination of the chest showed that it was normal. The ears were normal. The bowel movement was normal. The child was very irritable, and the intermittent temperature reached 102 at times.

The head was roentgenographed on the eighth day by Dr. Dalton Richardson, and the missing portion of penholder was found broken off inside the brain.

The child was sent to Dr. William O. Ott of Fort Worth, Texas, who removed the penholder. For a few days it looked as if the child would recover, but on the fifth day after the operation the child died from infection.

Norwood Building.

Nerve Metabolism.—Recent methodological advances have permitted the certain demonstration in nerve of respiration, heat liberation and metabolic changes during rest and, separately, during activity. The isolated nerve remains essentially normal for a time, permitting sufficient study, when kept in an appropriate medium with an adequate oxygen concentration.—Gerard, R. W.: Nerve Metabolism, *Physiol. Rev.* **12:** 549 (Oct.) 1932.

Special Article

THE FUNDAMENTALS OF ELECTRO-CARDIOGRAPHIC INTERPRETATION

J. BAILEY CARTER, M.D.
CHICAGO

(Concluded from page 1423)

A-V NODAL RHYTHM

In this disorder of the cardiac mechanism, the pacemaker of the heart is located in the A-V node. Automatism of the A-V node is thereby established. At a slow regular rate of about 40 to 45 per minute, it sends out impulses to both auricles and ventricles. Usually a normal Q-R-S complex occurs first, followed by an inverted P wave, which is superimposed on the end of the Q-R-S complex, on the T wave, or between the two waves. In some cases of nodal rhythm the P wave may come early, so that it falls with the Q-R-S wave and is concealed therein. Finally, it may precede the Q-R-S wave by a very short interval when the pacemaker is located high up in the A-V node (figs. 100 and 101). Although the P wave in nodal rhythm, as ordinarily considered, should be inverted, it has occasionally been described as upright, here being due probably to intra-auricular block. Nodal rhythm is a constant finding with the onset of death; it ushers in the prelethal bradycardia. A "migratory pacemaker" causes the ectopic focus to vary from one level to another between the sinus and the A-V node (figs. 104 and 105). The P waves, if present, vary in form. There is a constantly changing relationship of the P waves to the Q-R-S complexes. It is seen with apparently normal hearts, owing to neurogenic factors by way of the vagi.

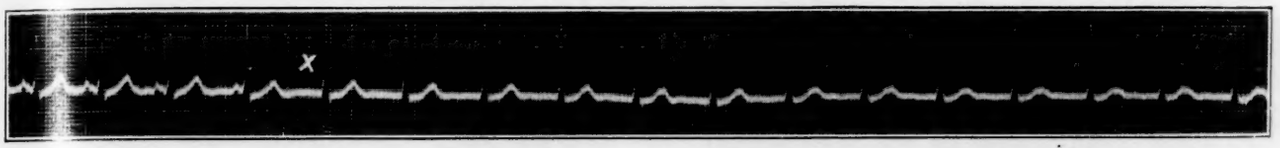


Fig. 100.—Upper nodal rhythm: At the beginning of this curve, from lead 2, is a shifting pacemaker with shortening of the P-R interval, until at *x* the P wave disappears entirely and the onset of nodal rhythm occurs. The P waves coincide with the Q-R-S complexes. No trace of an auricular complex is to be found and the line is perfectly smooth in diastole, the result, usually, of the simultaneous contraction of auricles and ventricles. This nodal rhythm has a rate of 90 per minute.

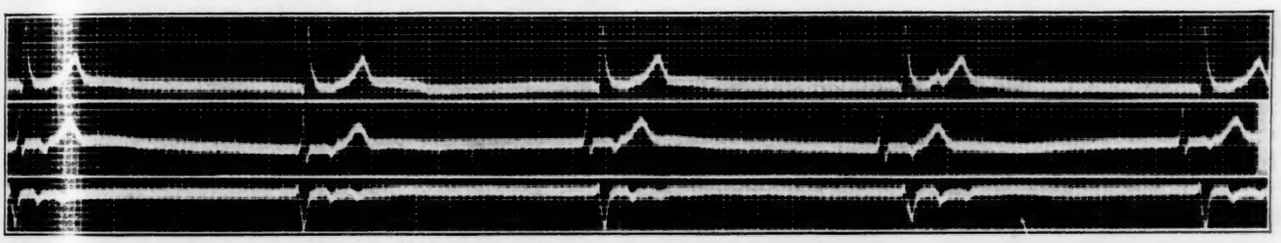


Fig. 101.—Lower nodal rhythm: Curve shows regular and slow action of the ventricles at a rate of 40 per minute. Note P waves occurring in S-T intervals. Left axis deviation and myocardial damage are also present. Record taken before exercise.

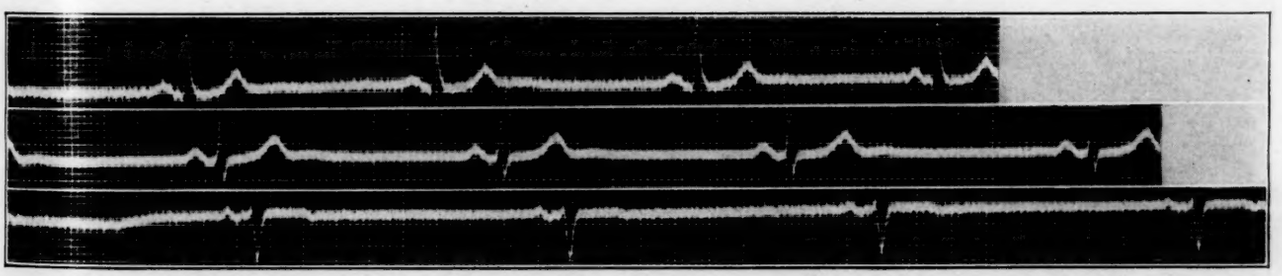


Fig. 102.—Bradycardia of sinus origin: Rate, 40 per minute. Note normal occurrence of P waves. Recorded after exercise from the same patient as in figure 101. Left axis deviation and myocardial damages still evident.

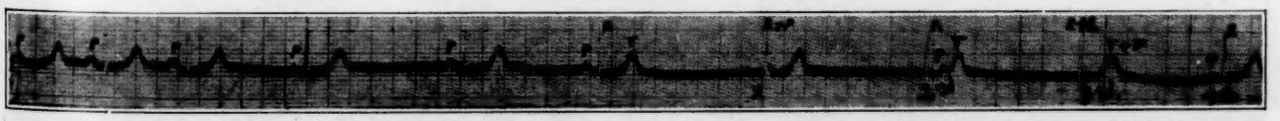


Fig. 103.—Escape: A curve showing sinus slowing of the whole heart. The rate is 45 per minute. Escape of A-V nodal origin occurs at *x*. The pause preceding *x* is so long that the A-V nodal irritability cannot tolerate it, and hence the beat at *x* occurs before it is due, beginning just before the peak of the delayed P wave, which is seen superimposed on the lower portion of S. The second nodal beat shows the P wave midway between S and T, while the third nodal beat reveals P superimposed on T. The fourth beat after *x* represents a normal cycle, in which the Q-R-S complex follows the P wave after a normal interval. This is the commoner form of escape. Note that the Q-R-S complexes of nodal origin vary only slightly from the normal. Ventricular escape is rare; it presents Q-R-S complexes which vary widely from the normal contour.

ESCAPE

The auricular rate may be so slow that the pacemaker in the A-V node does not wait for the impulse from the S-A node, but escapes. Such escape may be for one beat only or it may be for a group of beats, or, if the auricles are wholly paralyzed, it may constitute the entire cardiac mechanism. Rarely the escape is not from the node but from the ventricles, with the

development of an idioventricular rhythm. Escape is of no particular clinical importance but constitutes an interesting physiologic adjustment of the body in case of need. It sometimes has been confused with heart block and has been so labeled, incorrectly. It is, to be sure, A-V dissociation, but it is not heart block. In nodal rhythm only the A-V node controls the heart. In escape, the heart is under the control of two pacemakers (fig. 103).

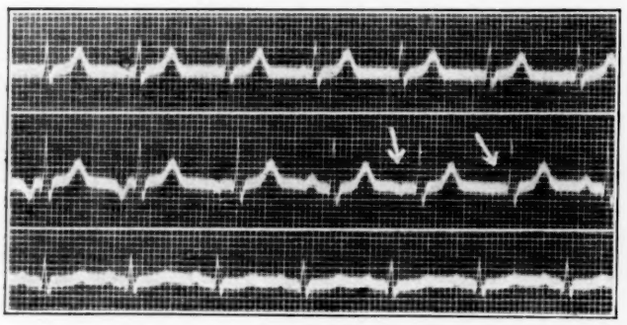


Fig. 104.—Shifting pacemaker within the sinus node: Note the variation in contour of P waves, and in the length of the P-R intervals. Myocardial damage is evidenced by Q-R-S being slurred in all leads.

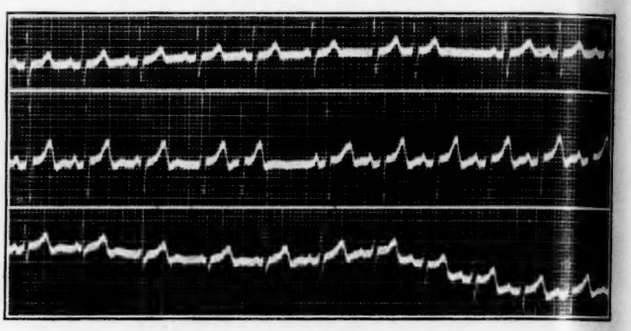


Fig. 105.—Shifting pacemaker, from sinus to A-V node. There is a marked variation in the form of the P waves. The P-R interval progressively shortens, until P disappears entirely and is followed by a nodal extrasystole. There is then a pause, and the sinus node again takes charge. Similar changes are present in leads 1 and 2.

CORONARY OCCLUSION

The correlation of bedside and of pathologic observations in coronary occlusion, with the resultant recognition of it as a definite clinical entity, has taken place only since 1912. Thrombosis is the commonest cause of interference with the coronary circulation. As in angina pectoris, the victims are most commonly men past 50 years of age. Except when death is sudden, the salient features of acute coronary occlusion consist of a sudden paroxysm of severe anginoid pain, which is usually substernal or upper abdominal and has the characteristic areas of distribution seen in severe angina pectoris. There is often associated a feeling of impending death. The face is pinched, ashen gray or very pale. Usually present are an early thready pulse with almost any form of arrhythmia, a sudden drop in systolic pressure, a diffuse, scarcely palpable cardiac impuse, distant heart sounds, and often a gallop rhythm. Acute emphysematous distention of the lungs with dyspnea or orthopnea and moist crackling râles at the lung bases, together with the onset of acute heart failure, is usually observed. A localized, evanescent pericardial friction rub usually develops, often within the first twenty-four hours. A short, mild fever with leukocytosis develops, perhaps as early as from eight to twenty-four hours following the accident. Coronary occlusion is often associated with, or is the cause of, abdominal signs and symptoms. Frequently the underlying coronary pathologic changes are entirely overlooked. These cases are usually diagnosed as "acute indigestion." Occasionally the attack may simulate an acute surgical condition of the abdomen; the importance of differentiating these conditions is readily apparent. Many of these patients die after lingering for a few days or weeks, but many recover to a surprising extent and may live several months or even years in relative comfort. A previous angina pectoris is frequently absent following coronary occlusion. Morphine in large doses (up to 1½ grains, during the first twenty-four hours) is the drug *par excellence* here, followed by milder sedatives if necessary. Digitalis is used only when definite heart failure is present. Theobromine and theophylline are sometimes of value. Prolonged bed rest for at least from four to six weeks should be followed finally by a return to very restricted activity.

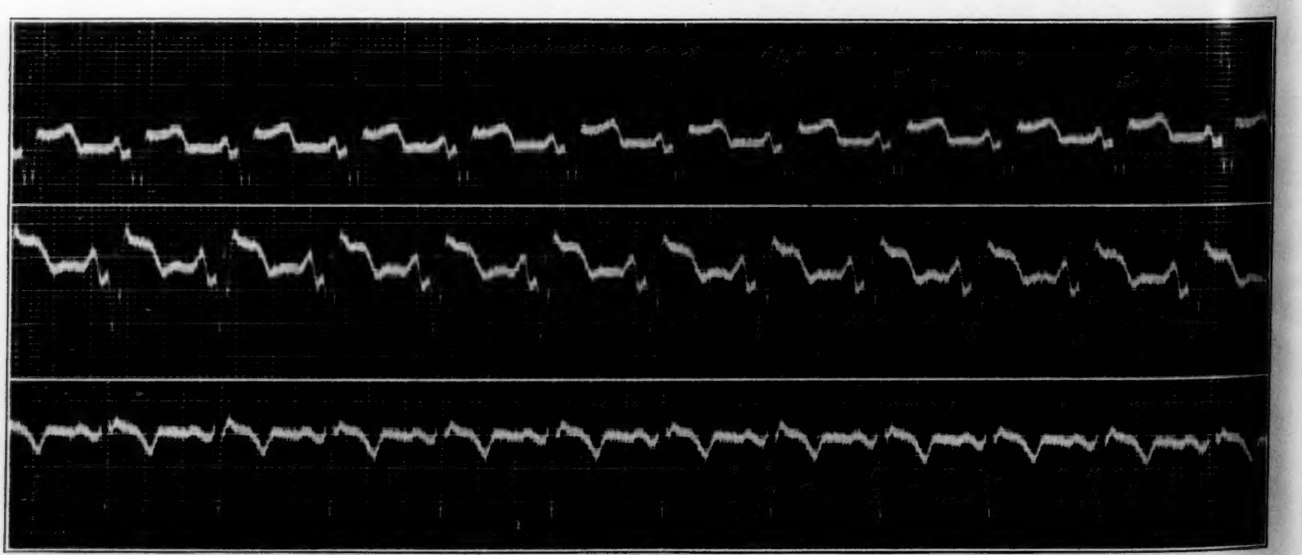


Fig. 106.—Early coronary occlusion: Note that $T_{1,2}$ has a high take off, and that T_3 is cove shaped. Rate, 98 per minute.

Electrocardiographic evidence may develop in from thirty minutes to forty-eight hours after a coronary accident. These changes are best studied in leads 1 or 3 rather than in lead 2. Records from a case of coronary thrombosis change from week to week and it is not unusual for the electrocardiogram to be normal in from six to twelve months. The size of the occluded vessel and the readiness with which anastomosis can be developed are important factors in the origin of the graphic findings. The earlier the record is taken after the accident, and the larger the vessel occluded, the more definite and marked will be the abnormalities, and the greater will be the distance of origin of the T wave from the base line. A failing heart or a big infarction may alter the usual graphic abnormalities.

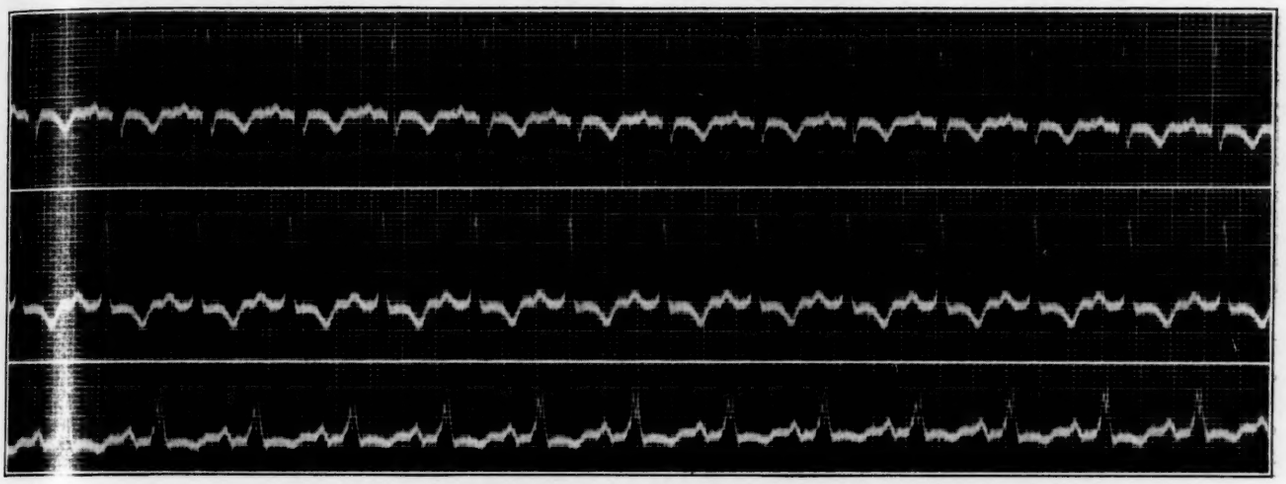


Fig. 107.—Coronary occlusion: $T_{1, 2}$ are Pardee's type of coronary T waves. Rate, 100 per minute.

lead 1 the opposite effect is seen in lead 3, that is, a curious depression of the S-T interval with a late slight rise, and vice versa when it occurs in lead 3. This so-called coronary T wave (of Pardee) changes gradually in the course of a day or two and tends to flatten out or to become inverted in all or any of the leads. This flattening or inversion of the T wave may be permanent, or it may gradually in the course of weeks or months return to a T wave of normal appearance. The common site of infarction, near the apex of the left ventricle, results from occlusion of the descending branch of the left coronary artery and gives rise to a characteristic electrocardiogram with high S-T interval and inverted T wave in lead 1. Infarction at the base, due to right coronary occlusion, apparently causes simi-

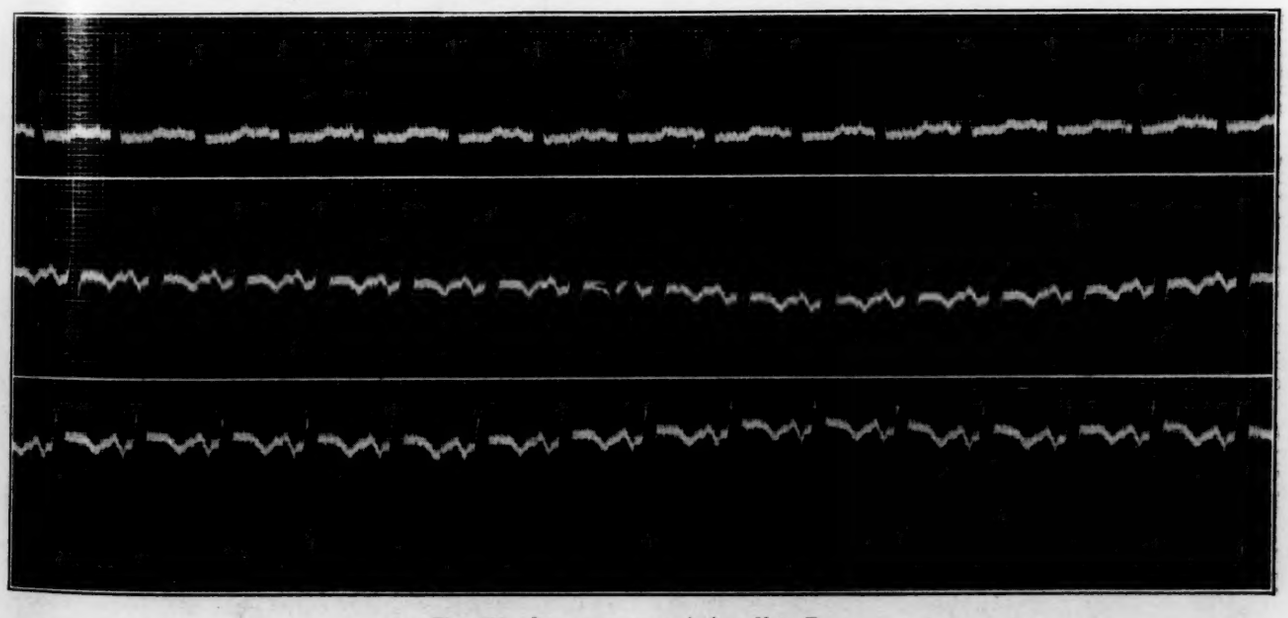


Fig. 108.—Late coronary occlusion: Note $T_{2, 3}$.

Early the Q-R-S wave may become slurred, decreased or widened, but usually it does not change so much as does the S-T interval and the T wave. In leads 1 and 3, and sometimes in lead 2, the T wave arises high on the downstroke of the R wave, with a curious convex bowing upward at the onset and a depression at the end, known as Pardee's sign. When this happens in lar changes in lead 3. Cardiac infarction may occur without graphic evidence, owing to the location of the infarct in a "silent area" of the heart.

Changes resembling the foregoing are occasionally encountered, as temporary findings during the course of pneumonia, rheumatic fever and uremia; they may cause confusion in diagnosis. Too much significance should

not be attached to minor or questionable electrocardiographic abnormalities. The T wave may be physiologically inverted, temporarily, in a normal person by

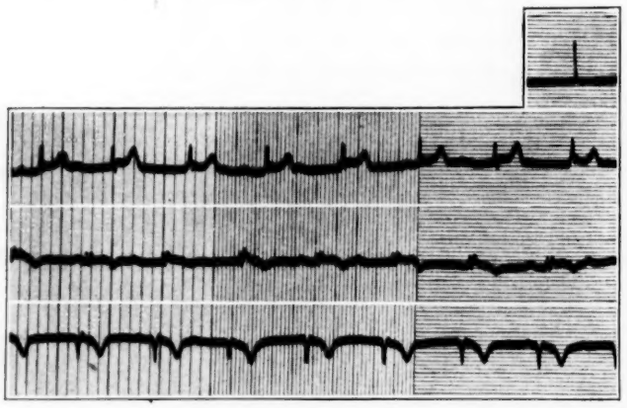


Fig. 109.—Coronary occlusion with complete heart block. Auricular rate, 110; ventricular rate, 90 per minute. T_1 arises above the base line and is high. T_2 negative. T_3 markedly negative with duplicated descending and ascending limbs.

drinking ice water (fig. 145). Chronic coronary occlusion usually gives no characteristic electrocardiographic picture (figs. 106 to 110, 123, 124, 134 and 138).

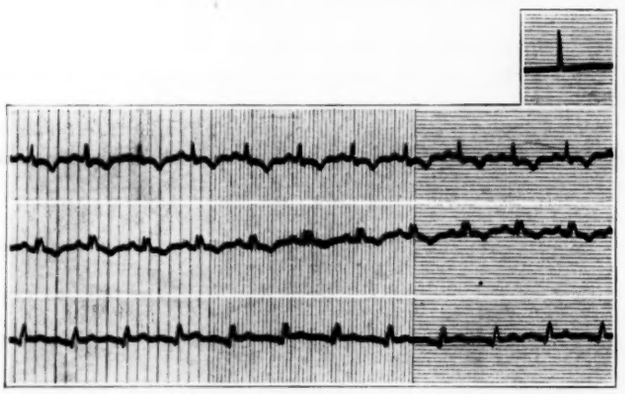


Fig. 110.—From the same patient as figure 109, taken six months after the coronary accident. Normal sinus rhythm. Rate, 120 per minute. P-R interval from 0.12 to 0.14 second. T_1 of coronary type and still negative. T_2 is rapidly returning to normal. T_3 has already become upright. (The original was retouched slightly before reproduction.)

MYOCARDIAL DAMAGE

Myocardial damage is usually evidenced, electrocardiographically, by a slurred or notched Q-R-S complex in at least two leads. If this notching or slurring occurs near the base line, or if the limb of the Q-R-S

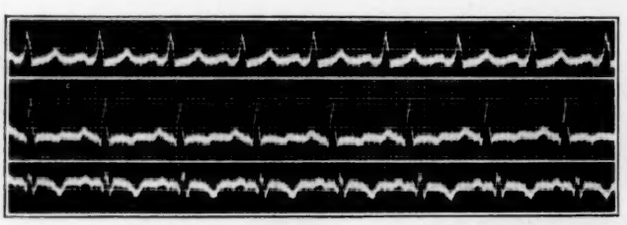


Fig. 111.—Myocardial damage: Rate, 120 per minute. P_3 diphasic, $Q\text{-}R\text{-}S_{1,2}$ slurred, $Q\text{-}R\text{-}S_3$ notched, $T_{2,3}$ negative. Record taken May 31, 1929; patient died, July 8, 1929.

complex is crossing a line of the graph paper, one must be careful in making a decision regarding slurring. An inverted or diphasic T in one or more leads exclusive of lead 3 is also indicative. A Q-R-S complex of low voltage in all leads less than 5 mm. is likewise significant, as is a T wave of low voltage in all leads, less than 1 mm. Evidence of other coexisting ventricular damage, such as ventricular extrasystoles, coronary occlusion, or block, is also helpful in drawing conclusions. The P wave, if notched or inverted,

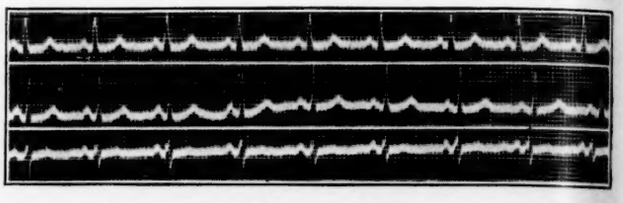


Fig. 112.—Myocardial damage, left axis deviation: $Q\text{-}R\text{-}S_{1,2,3}$ slurred. $Q\text{-}R\text{-}S_3$ notched, diphasic. T_3 diphasic. Many of the other records here included show evidence of myocardial damage.

may be indicative of damage to the auricular myocardium. The degree of myocardial damage is roughly estimated by the number of the foregoing combinations

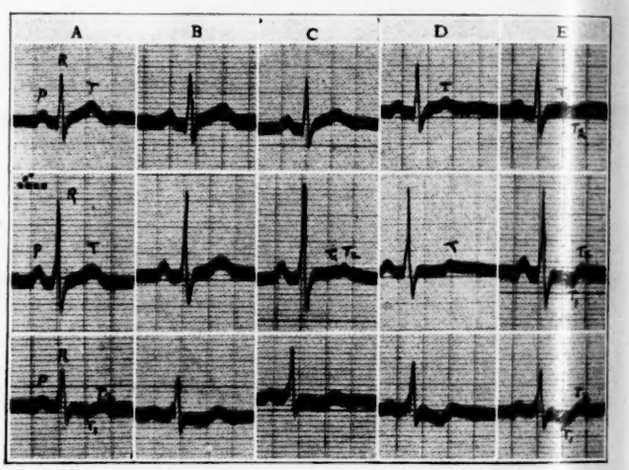


Fig. 113.—Progressive increase of digitalis effect on the T wave. This effect usually consists of a diminution in the height of T, with a depression of the S-T interval so that it comes to lie below the isoelectric level. T, becoming smaller, tends to disappear into this increasingly depressed S-T interval. Note the double topped T waves. From "Clinical Aspects of the Electrocardiogram," by Harold E. B. Pardee. Courtesy Paul B. Hoeber, Inc., New York.

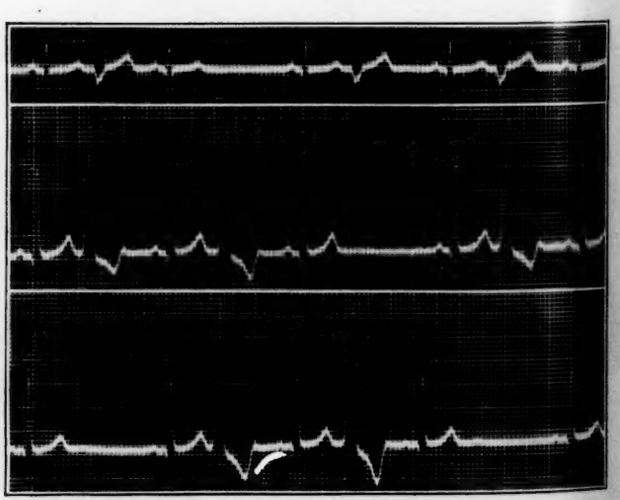


Fig. 114.—Digitalis coupling: Right ventricular extrasystoles. These at first appear to be interpolated but they are not.

that coexist and whether these are more or less marked. Limitations of electrocardiographic abnormalities as dependable diagnostic criteria here are due to the fact that physiologic variations are hard to rule out. The

graphic record cannot determine the cause of the damage or whether it is acute or chronic. Similar changes may be caused by digitalis (figs. 111 and 112).

EFFECTS OF DIGITALIS

Toxic effects from digitalis may be evidenced by the appearance of one or more of the following changes in the electrocardiogram (figs. 113, 114 and 115):

1. Slowed rate.
2. Incomplete sinus node block.
3. Prolongation of the P-R interval.
4. Prolongation of the Q-R-S interval.
5. Increased amplitude and slurring of the Q-R-S complex.
6. Increased amplitude of the T wave.
7. Diphasic or inverted T, and S-T interval.
8. Diphasic Q-R-S complex, especially the R-S portion.
9. Ventricular extrasystoles, followed by ventricular tachycardia with very toxic dosage.
10. Ventricular fibrillation with lethal dosage.
11. Auricular extrasystoles, and auricular fibrillation.
12. Unusual mechanisms, such as incomplete or complete dissociation of the auricles and ventricles.

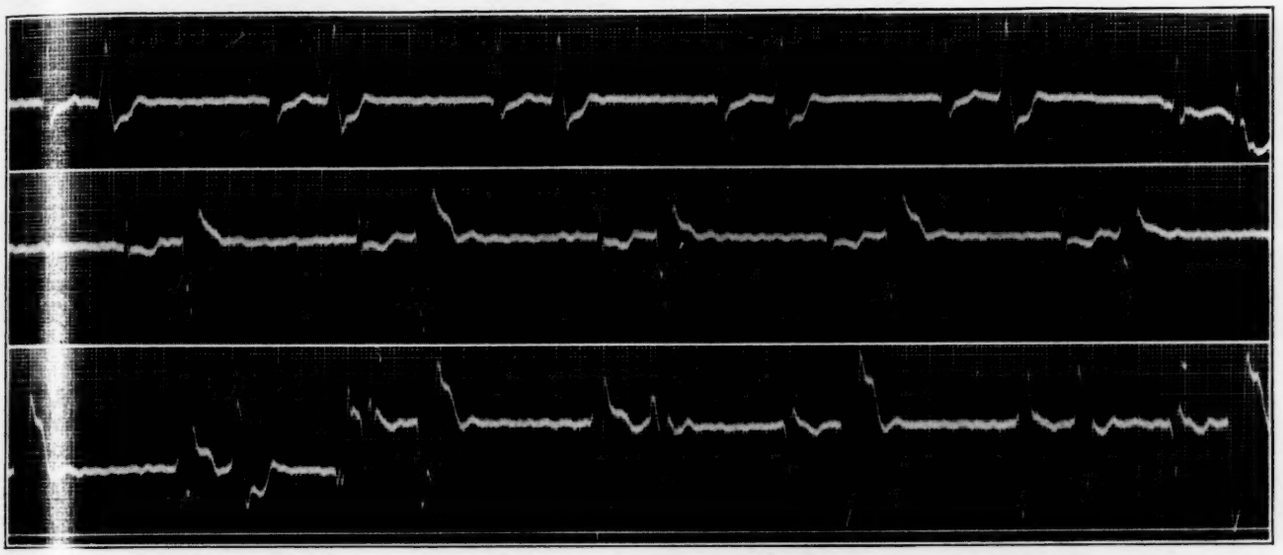


Fig. 115.—Digitalis coupling: Heart block is almost complete in leads 1 and 2. Bigeminy is present. The extrasystoles are not from the same focus in leads 2 and 3. There is an alternation of the normal complexes in lead 3. Complete block is not in evidence in lead 3.

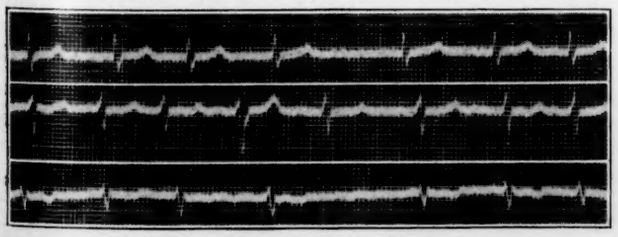


Fig. 116.—Low voltage: A record that approaches the required 5 mm. height of Q-R-S in either direction in all leads. This curve is indicative of a weakened myocardium. Any other abnormalities?

PROGNOSTIC SIGNIFICANCE OF T WAVE NEGATIVITY

Repeated studies over a period of fourteen years by Willius resulted in the following observations:

Of 347 patients with mitral stenosis, not studied electrocardiographically, 128 (37 per cent) died within sixteen months.

Of 43 patients with mitral stenosis showing significant T wave negativity, 27 (63 per cent) died within twelve months.

Of 200 patients with rheumatic aortic insufficiency, without electrocardiographic study, 78 (39 per cent) died within sixteen months.

Of 62 patients with rheumatic aortic insufficiency with significant negative T, 35 (56 per cent) died within fifteen months.

Of 137 patient with syphilitic aortic insufficiency, without electrocardiographic study, 63 (46 per cent) died within sixteen months.

Of 42 patients with syphilitic aortic insufficiency, with significant negative T, 32 (76 per cent) died within eleven months.

Of 272 patients presenting a negative T, associated with coronary disease, 181 (67 per cent) died of organic heart disease within an average of seventeen months.

Of 116 patients presenting a negative T_1 and T_2, associated with coronary disease, 75 (65 per cent) died of organic heart disease within an average of twelve months.

Of 76 patients presenting a negative T_1, T_2 and T_3 associated with coronary disease, 50 (66 per cent) died of organic heart disease within an average of twelve months.

Of 119 patients presenting a negative T_2 and T_3 associated with coronary disease, 59 (50 per cent) died of organic heart disease in an average of twenty-four months.

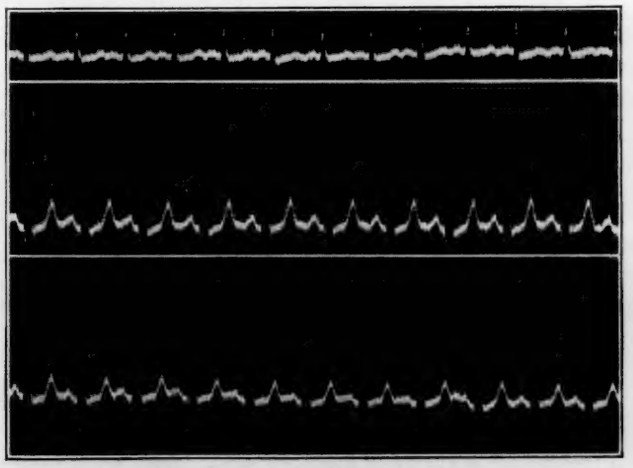


Fig. 117.—High voltage in leads 2 and 3 but not in lead 1. This curve does not indicate ventricular hypertrophy or forceful heart beats, but it is indicative of a healthy myocardium as contrasted with figure 116.

Of 463 patients presenting negative T_1 with hypertensive heart disease, 260 (66 per cent) died of organic heart disease in an average of nineteen months.

Of 281 patients presenting a negative T_1 and T_2 with hypertensive heart disease, 166 (59 per cent) died of organic heart disease within an average of thirteen months.

Of 135 patients presenting a negative T_1, T_2 and T_3 with hypertensive heart disease, 91 (67 per cent) died of organic heart disease within an average of twelve months.

Of 140 patients with negative T_2 and T_3 with hypertensive heart disease, 61 (44 per cent) died of organic heart disease within an average of seventeen months.

CONGENITAL DEXTROCARDIA

In congenital dextrocardia with or without complete situs transversus, all waves in lead 1 are downward and all are normal in contour and bear their proper relationships, one to the other. Leads 2 and 3 are transposed and the record shows right axis deviation. The

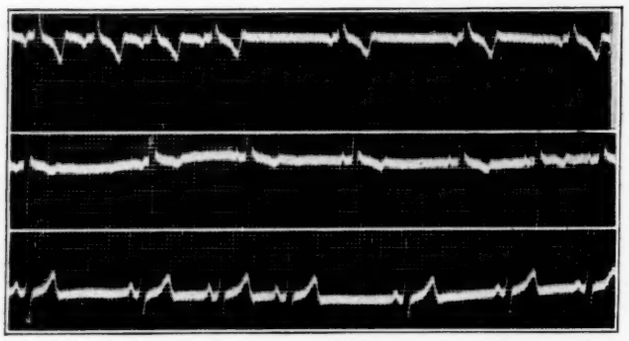


Fig. 118.—Congenital dextrocardia: All waves are inverted in lead 1, and lead 2 is interchanged with lead 3. Dropped beats are also present, the result of sinus arrest.

electrocardiogram is used to differentiate congenital from acquired displacement of the heart (figs. 118, 119 and 120).

THE DYING HUMAN HEART

The cessation of auricular activity precedes the cessation of ventricular activity by from 14.8 seconds to 8.5 minutes. Rarely the ventricular activity ceases first. One may see:

1. Marked bradycardia.
2. Nodal rhythm.
3. Migration of the pacemaker.
4. S-A block, the P wave disappearing earlier than the Q-R-S wave in the electrocardiogram.
5. Delayed A-V conduction.
6. Partial block.
7. Complete block.
8. Complete bundle branch block.
9. Auricular flutter.

Fig. 119.—A typical graphic record of congenital dextrocardia, with all waves inverted in lead 1, and lead 2 transposed with lead 3.

10. Auricular fibrillation.
11. Ventricular fibrillation.
12. Complete cardiac standstill.

A sudden onset of marked bradycardia with the establishment of nodal rhythm is the most frequent change in the mechanism of the heart immediately preceding death. It occurs in more than 70 per cent of the cases. The events after this vary. There are often varying phases of block, suggesting that marked

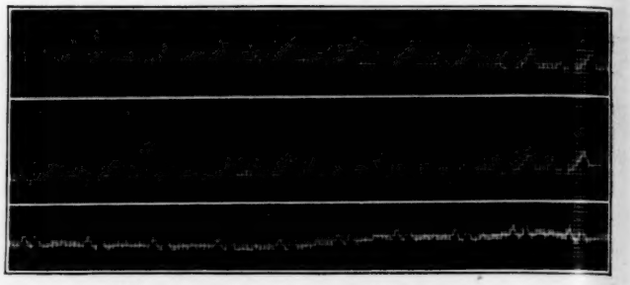


Fig. 120.—Normal record obtained from the same patient as figure 119. Owing to absence of clinical observations indicative of cardiac disorder, another record was requested. It was discovered that the lead wires had been crossed in obtaining figure 119.

vagal action occurs at a time when death appears to have occurred; a marked degree of cardiac and cerebral asphyxia being present. These conditions have been experimentally produced and similar electrocardiograms have been obtained.

Later there are long periods of complete cardiac asystole. Frequently there occurs a fusion of wave components. Ventricular fibrillation may occur, the result of more profound changes in the musculature itself, but it is doubtful whether this is the terminal mechanism in the majority of cases, as is commonly believed.

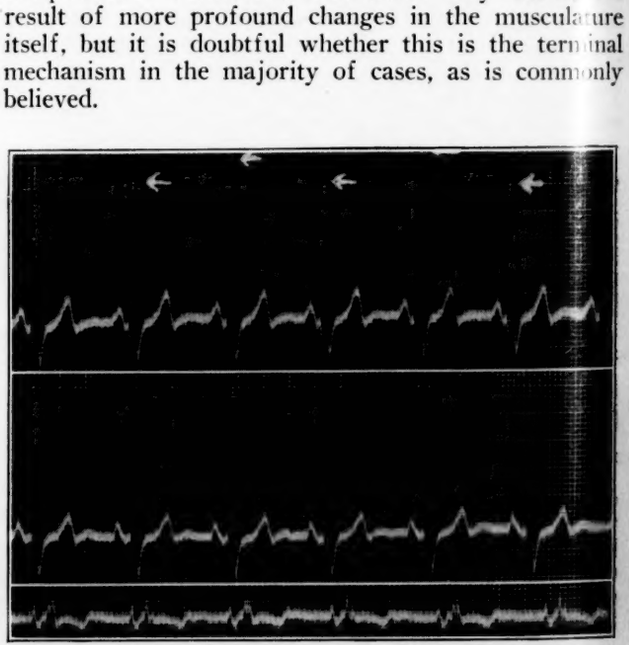


Fig. 121.—Alternation; pulsus alternans: Rate, 80 per minute. Note that with every other beat the amplitude (height) of the Q-R-S complex is increased; most evident in lead 1.

Electrocardiographic studies of the dying human heart are, for the present at least, solely of academic value, since significant changes appear in the record only a few minutes before clinical death.

CASE HISTORIES

CASE 1.—A robust man, aged 25, complained of palpitation and occasional shortness of breath, not associated with exertion but more likely to occur when he became nervous or was under emotional strain. The blood pressure was 128 systolic and 80 diastolic. The heart tones were normal. There was no cardiac enlargement. Fluoroscopy gave negative results. Blood and urine examinations were normal (fig. 122).

CASE 2.—A business man, aged 50, had, during a golf game of the previous week, a mild attack of substernal pain, associated with mild discomfort in the abdomen, belching and distention. He had had no complaint, other than mild fatigue and a little palpitation since. The blood pressure was 100 systolic and 70 diastolic. The heart tones were moderately weak; no murmurs were heard. The Wassermann reaction was negative. Blood counts, examination of the urine and roentgen examination gave normal results (fig. 123).

CASE 5.—A man, aged 44, of robust stature, weighing about 175 pounds (80 Kg.) had been ill for a period of two or three years. He complained of mild precordial pain, and slight

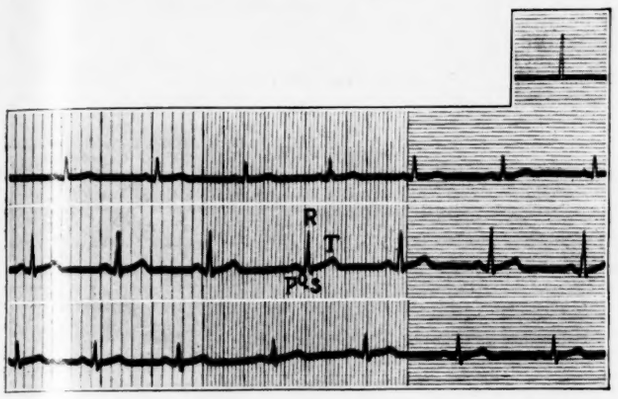


Fig. 122.—The electrocardiogram is a normal curve and substantiates the diagnosis of no cardiac disease. This is frequently a great help in convincing a person with a cardiac neurosis that his heart is normal. In this curve the P waves are approximately 1 mm. high, approximately 0.1 second wide and upright in all leads, with a constant P-R interval, approximately 0.18 second. The Q-R-S complex is upright in all leads with a transmission time of 0.08 second, no notching or splitting and no respiratory variant. T waves are upright in all leads and regular in form.

breathlessness on exertion, particularly in walking against the wind. At times his heart seemed to beat slowly. He did not complain of symptoms indicating decompensation. The blood pressure was 140 systolic and 84 diastolic. The pulse rate was 40. Temperature and respiration were normal. The heart was not enlarged. There was no evidence of peripheral arteriosclerosis or of decompensation. The heart tones were of moderate intensity. No murmurs were present. There was no accentuation of the heart sounds (fig. 126).

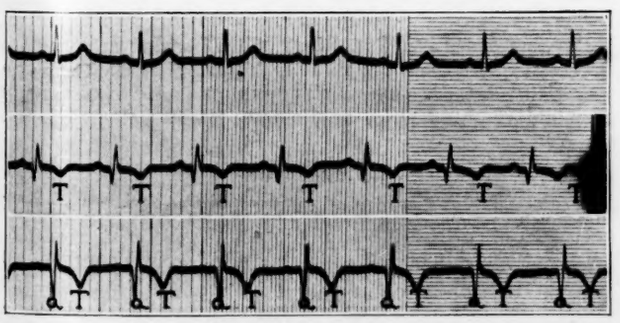


Fig. 123.—The electrocardiogram is diagnostic of myocardial infarction from recent or old coronary thrombosis. Note the sharply inverted T wave in leads 2 and 3, and the presence of a Q wave in lead 3. The electrocardiogram was the most important factor in making the diagnosis.

CASE 7.—A man, aged 60, had known that he had cardiac disease for over a year and had been seen by a number of physicians. His chief complaints were dyspnea on exertion, rapid pulse, slight edema of the ankles, cough and loss of appetite. During the previous month he had been confined to bed. The past history was essentially negative. He had a marked cyanosis of the face and lips. The left heart border on percussion was out to the anterior axillary line. The pulse rate was 120. The blood pressure was 106 systolic and 80 diastolic. No murmurs were heard. The heart sounds were weak at both apex and base. A few moist râles were heard in the lung bases. The liver was enlarged to about 4 cm. below the costal margin. A slight pitting edema of the ankles was observed. Sclerosis

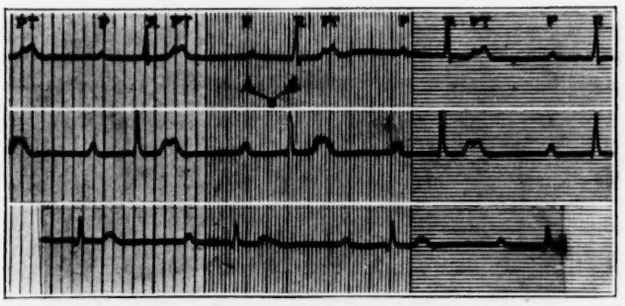


Fig. 126.—This record shows evidence of a partial heart block. It is of the 2: 1 variety, in which the ventricles fail to respond to every second beat of the auricle. The auricular rate is 80, the ventricular rate is 40 per minute. The P-R interval is 0.44 second. This record indicates an injury to the main conducting bundle, which no longer transmits impulses in the normal manner. The possible pathologic explanation of such a defect is a thrombosis of a branch of a coronary artery with myocardial infarction in the upper septum impairing the bundle. (The original electrocardiogram was slightly retouched before reproduction.)

of the peripheral arteries was marked. The basal metabolic rate and the blood count were normal. A two-meter heart plate showed an enlargement of the left ventricle without widening of the aorta (fig. 128).

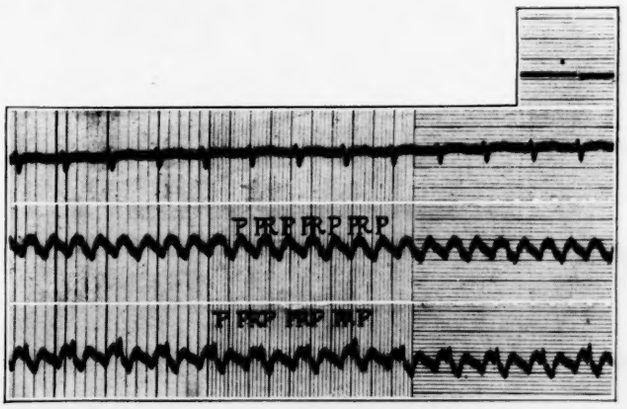


Fig. 128.—The record shows a typical auricular flutter. The auricular rate is around 270, the ventricular rate half that, or 135 per minute; 2: 1 block being present. In this case the flutter is chronic, having persisted for many months. In leads 2 and 3 note that every other upward spike is quite sharp or peaked, while the remainder show a notching, or two small spikes. The single peaks represent f waves, the double peaks represent f waves with R waves superimposed on them; f waves have been incorrectly labeled P waves in the record.

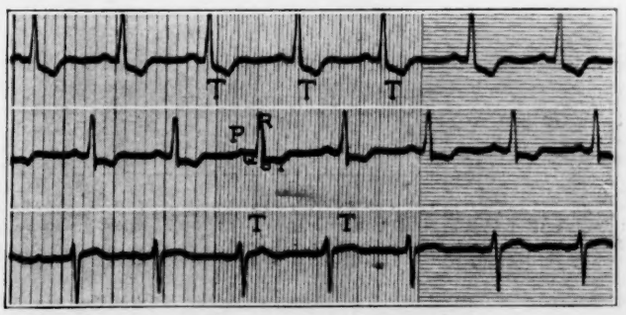


Fig. 132.—The electrocardiogram shows the typical curve seen in hypertensive heart disease with left ventricular preponderance. The T wave is inverted in leads 1 and 2 but is upright in lead 3. Q-R-$S_{1, 2, 3}$ slurred. There is some depression of the S-T interval due to digitalis. This curve is indicative of a serious prognosis.

CASE 9.—A Negro laborer, aged 60, entered the hospital complaining of dyspnea, palpitation, attacks of nocturnal orthopnea, edema of the ankles, and insomnia. The past history revealed

cardiac difficulties of two years' duration. The left heart border was at the midaxillary line. A slow gallop rhythm with a systolic basal murmur and a loud aortic closure were present. There was fluid in both lung bases, marked enlargement of the liver, ascites, and edema of the ankles. The urine showed a three plus albumin and numerous hyaline and granular casts. The Wassermann reaction was negative, a blood count normal. A two-meter heart plate showed marked enlargement of the left ventricle and a slightly widened aorta (fig. 132).

CASE 10.—A laborer, aged 56, had had attacks of palpitation of sudden onset ever since he was a boy. These lasted from a few minutes to several hours and stopped as suddenly as they began. Clinically, this conforms to the concept of paroxysmal tachycardia. The past history was negative. There was no evidence of cardiac enlargement. No murmurs were detected. The blood pressure was 124 systolic and 80 diastolic. No evidence of decompensation was observed and no change in the peripheral vascular system. Examination of the blood and the urine gave normal results. The Wassermann reaction was negative. A two-meter heart plate was normal (fig. 133).

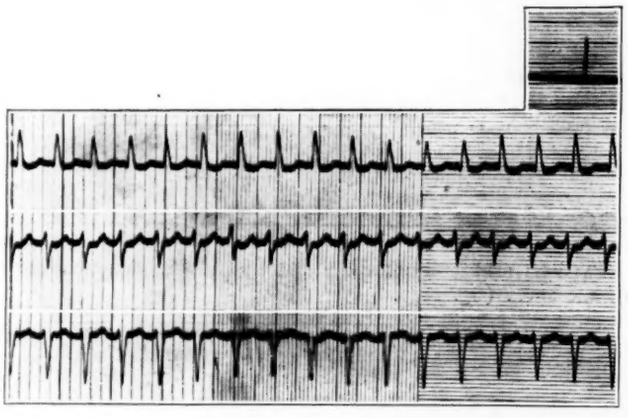


Fig. 133.—The electrocardiogram was taken during a paroxysm of auricular tachycardia, and shows a rate of 170 per minute. This is usually a benign type of tachycardia and may occur in quite normal individuals. It may at times be a forerunner of a more serious condition but alone is seldom serious. Note the P wave before each Q-R-S complex.

CASE 12.—A man, aged 30, weighing 240 pounds (109 Kg.) developed pneumonia, followed by empyema, and was ill for eighteen months. When he returned to work, all laboratory examinations gave normal results. He returned to his normal weight and activities, and no cardiac symptoms had been noticeable at any time (fig. 135).

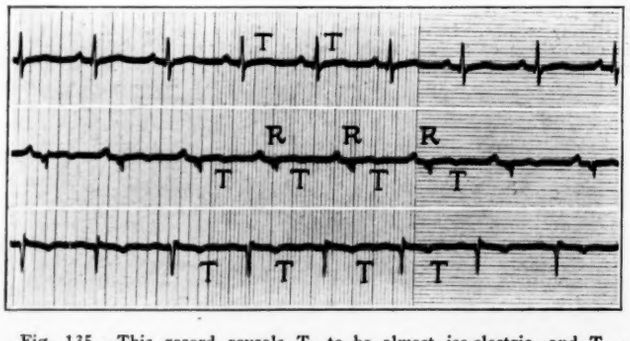


Fig. 135.—This record reveals T_1 to be almost iso-electric, and $T_{2,3}$ negative with $Q\text{-}R\text{-}S_{1,3}$ slurred and $Q\text{-}R\text{-}S_2$ notched. These deformities are indicative of definite myocardial damage.

CASE 14.—An active woman, aged 50, noticed at 7 a. m. mild pains in the chest and arms and two hours later a surging, hot, full sensation in the head and neck with dizziness, followed by a throbbing sensation all over the body, and a vise-like pain across the upper part of the chest, radiating into the neck and down both arms. A mild attack of palpitation, irregular pulse and precordial pain, following an automobile accident two years previously, was noted. The pulse was very irregular, and at times it was not obtainable. The heart was enlarged to the left. The tones at the apex were weak and irregular. The blood pressure was 90 systolic and 70 diastolic. Two hypodermic injections of morphine gave only slight relief. She was admitted to the hospital eight hours after the onset, and figure 138 was recorded. She remained in the hospital seventy-seven days, and at no time was there a pericardial friction rub or a leukocytosis noted. The urine was normal. Nine months later, during an attack of mild cardiac distress, figure 139 was recorded.

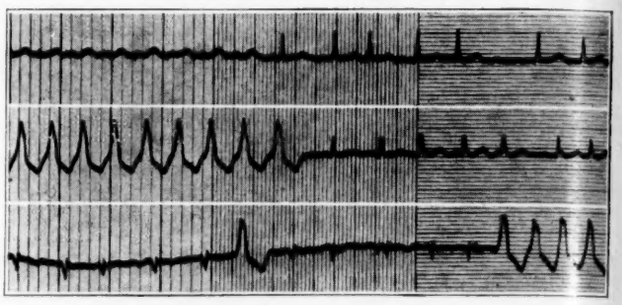


Fig. 138.—The diagnosis of coronary occlusion is justified on the evidence of such marked myocardial damage following such an onset, although no coronary change of the T wave is present. Note paroxysms of ventricular tachycardia in all leads, auricular fibrillation, and a ventricular extrasystole in lead 3 of the same origin as the tachycardia. (Original slightly retouched.)

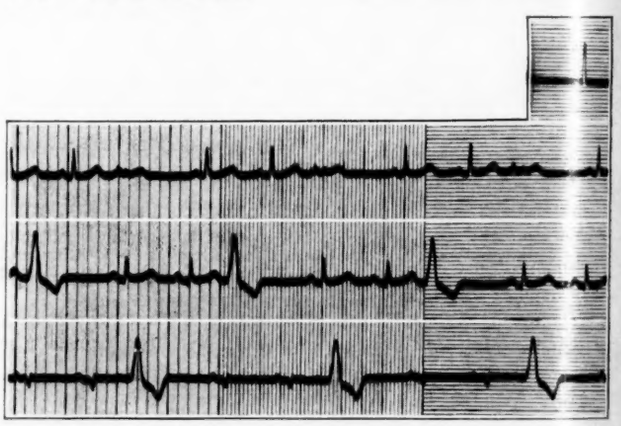


Fig. 139.—Normal sinus mechanism: Rate, 100 per minute. Right ventricular extrasystoles (trigeminus). Myocardial damage, Q-R-S slurred in all leads. From the same patient as figure 138, nine months later.

CORRECTIONS

The following corrections on previously published material are noted by the author:

Page 1170: Figures 2 and 3, modified from Katz.

Page 1172: Figure 6, modified from Lewis.

Page 1173: Line 5, under "The Normal T Wave," substitute "excitation" for "excitability."

Page 1255: Line 14, under "Abnormal P-R Interval," should read "reciprocal rhythm and ventricular escape."

Page 1258: In figure 24, the second sentence of the legend should read "The distance x to y is twice that of x to z.

Page 1259: In figure 28, the first sentence of the legend should read "Right ventricular extrasystoles at x with retrograde P waves superimposed on them at 4."

Page 1345: At the end of the first column omit "it is too short; the T-P interval is shortened," so that the sentence reads "Therefore, the pause that follows an auricular extrasystole is not compensatory, and hence the fundamental rhythm is disturbed."

The author assumes sole responsibility for the statements expressed in these articles.

[THE END]

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1932, p. 359).

Eli Lilly and Company, Indianapolis.

Gas Gangrene Antitoxin (Combined).—An antitoxic serum prepared by immunizing horses against the toxins of B. perfringens (B. welchii) and vibrion septique. After the desired degree of potency is obtained, the horses are bled, the plasma separated and the serum prepared in a manner similar to that used for other antitoxic serums. The product is concentrated and refined by a method which is similar to that used for diphtheria antitoxin. Marketed in packages of one syringe containing 10,000 units of perfringens antitoxin and 10,000 units of vibrion septique antitoxin.

Dosage.—The contents of one syringe or more, preferably by intravenous injection, repeated in from eight to twenty-four hours, as required.

Tetanus-Gas-Gangrene Antitoxin (Combined).—An antitoxic serum prepared by immunizing horses against the toxins of B. tetani, B. perfringens (B. welchii), and vibrion septique. After the desired degree of potency is obtained, the horses are bled, the plasma separated and the serum prepared in a manner similar to that used for other antitoxic serums. The product is concentrated and refined by a method which is similar to that used for diphtheria antitoxin. Marketed in packages of one syringe containing 1,500 units of tetanus antitoxin, 1,000 units of perfringens antitoxin and 1,000 units of vibrion septique antitoxin.

Dosage.—The contents of one syringe, given intramuscularly as promptly as possible after injury and repeated in from five to seven days if further danger of infection is present.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1932, p. 376).

The National Drug Co., Philadelphia.

Tuberculin Intracutaneous for Mantoux Test.—Marketed in packages of one intradermal syringe (single test), containing 0.1 cc. of a 1 in 1,000 dilution of old tuberculin (O. T.), with a vial of glycerin bouillon for control; in packages of two intradermal syringes (double test), one containing 0.1 cc. of a 1 in 1,000 dilution of old tuberculin (O. T.) with vial of glycerin bouillon for control and the other containing 0.1 cc. of a 1 in 100 dilution of old tuberculin (O. T.) with vial of glycerin bouillon for control; in packages of one 1 cc. ampule containing sufficient intradermal tuberculin solution for ten single tests; in packages of two 1 cc. ampules containing sufficient intradermal tuberculin solution for ten double tests; in packages of one 5 cc. ampule containing sufficient intradermal tuberculin solution for fifty single tests; and in packages of two 5 cc. ampules containing sufficient intradermal tuberculin solution for fifty double tests.

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

BISODOL NOT ACCEPTABLE FOR N. N. R.

BiSoDol (BiSoDol Company, New Haven, Conn.) is offered to physicians for use in "The Early Treatment of Colds" and in the treatment of "colds, rheumatism, cyclic vomiting and other conditions associated with an acidotic symptom" (*Clin. Med. & Surg.*, February, 1932; ibid, April, 1932).

The Council on Pharmacy and Chemistry finds BiSoDol unacceptable for New and Nonofficial Remedies because it is an unscientific mixture of indefinite composition, offered to physicians with extravagant and unwarranted therapeutic claims under a name which is not descriptive of its composition. The Council endorses the conclusions of the Council on Dental Therapeutics of the American Dental Association (*J. Am. Dent. A.* **19**:1427 [Aug.] 1932) and offers the following extracts from this report for the information of the medical profession:

"BiSoDol is stated on the principal container to offer 'A rational and effective method of re-establishing the normal alkalinity of the body without danger of systemic disturbance.' No statement of composition other than 'The presence of Malt Diastase and Carica Papaya Compound makes it valuable in digestive disturbances,' appears on the container. In advertising issued to dentists, it is stated to be 'composed of Sodium Bicarbonate and Magnesium Carbonate, Bismuth Subnitrate, the amylolytic enzyme, Diastase, the proteolytic enzyme, Papain and Oil of Peppermint.'

"BiSoDol is stated to be a 'balanced combination of alkalis which can be depended upon to meet safely the needs of alkaline medication . . . an effective agent, not only in combating the more pronounced conditions of acidosis and hyperacidity but for replenishing the depleted alkali reserve.' 'The combination of Sodium Bicarbonate and Magnesium Carbonate,' it is claimed, 'corrects abnormal acid conditions with safety and effectiveness.' It is stated that 'Bismuth Subnitrate has long been used for its astringent and sedative action on the gastric and intestinal mucosa and to alleviate dyspeptic conditions, while the beneficial results of Papain in the treatment of dyspepsia and gastric catarrh are well known.' It is advertised to physicians and dentists for 'hyperacidity,' 'gastric or duodenal ulcer,' 'digestive disturbances,' 'anesthesia,' 'common colds,' for nausea of pregnancy, and as part of an antacid diet, for hyperacidity in gallbladder disease, sea-sickness, after alcoholic indulgence, for caries, for pyorrhea, gingivitis, salivary calculus, after extractions, for correction of digestive irregularities while awaiting dentures, and as a mouth wash. Clinical samples, of course, are available in handy little cans for direct distribution to patients.

"According to the chemist's report (of the Bureau of Chemistry of the American Dental Association), BiSoDol is essentially three parts of magnesium carbonate and four parts of baking soda to which a little oil of peppermint has been added. The amount of bismuth subnitrate in a single dose, approximately one-fifteenth of the average daily dose, is so small that for all practical purposes it might as well be omitted.

"The action of the amounts of diastase and papain present in BiSoDol and which may be expected to be taken into the alimentary tract would certainly be slight. Unless definite evidence to the contrary is produced, it may be concluded that their action under conditions found in the alimentary tract would certainly be of no consequence. BiSoDol will, therefore, do no more, no less, than a mixture of three parts of magnesium carbonate-U. S. P., and four parts of sodium bicarbonate-U. S. P.

"BiSoDol is given a 'scientific' air by frequent references to various research workers, although an examination of some of the reports mentioned shows no reference to medication with a mixture even roughly approximating BiSoDol in composition.

"Much of the information bolstered by references to scientific journals is offered to show that administration of sodium bicarbonate leads to alkalosis. This is supported by quotations from editorials which appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and by reference to work in other reputable medical journals. One of the papers quoted or referred to is that of Kast, Myers and Schmitz, who showed that excessive intakes of sodium bicarbonate led to alkalosis, but also that this was one of several causes, pyloric obstruction being also a common cause. Obviously, alkalosis due to pyloric obstruction would be made worse by ingestion of sodium bicarbonate, and it is apparent from the chemist's report that a dose of BiSoDol contains more sodium bicarbonate than the dose of the latter recommended for heartburn, for example. The misleading use of these quotations in this advertising is further illustrated by a careful reading of the article by these authors, who state that their findings indicate the data on both the p_H and on the bicarbonate values in the blood to be necessary to secure an adequate index of the acid-base balance. Yet the public may purchase BiSoDol for self-medication without this necessary laboratory aid for diagnosis. Again, the blanket dose recommended on the can is 'one teaspoonful in water after meals as indicated,' whether the condition is simple heartburn, gastric or duodenal ulcer, or dental decay in pregnancy.

"The blanket directions for the use of BiSoDol, either as an antacid or as a digestant, are given on the container as 'one teaspoonful in water after meals as indicated.' Reference to the report of the chemist shows that a single dose of BiSoDol (4 Gm.) would contain, aside from bismuth subnitrate, which is present in far from a therapeutic dose, as already pointed out, magnesium carbonate-U. S. P., 1.7 Gm. (26 grains) and sodium bicarbonate-U. S. P., 2.25 Gm. (35 grains). If it is deemed advisable by a physician to prescribe sodium bicarbonate for hyperacidity three times a day before meals, the dose, according to certain authorities, should be about 0.5 Gm. (7½ grains) and a daily dose would be 1.5 Gm. (23 grains). One dose of BiSoDol would furnish not only this amount, but 12 grains in addition, not to mention the alkalinizing effect of the magnesium carbonate. Hence, it is apparent that instead of lessening the tendency to alkalosis because of induced amounts of alkali, the tendency becomes even greater."

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER, 29, 1932

GROWTH-PROMOTING PROPERTY OF HEATED AND OF RAW MILK

An enormous increase has taken place in the percentage of milk pasteurized in the United States during the past thirty years; namely, for cities of 10,000 population and over from a negligible quantity to the impressive figure of 87.5 per cent.[1] Despite recurring epidemics of milk-borne diseases, a small but ardent group of advocates of raw milk has vigorously contended that heating affects adversely the healthfulness and growth-promoting properties of milk. Intensive campaigns in favor of raw milk have been conducted in the form of leaflet distribution, newspaper and magazine advertisements, and radio broadcasts. Publicity has been given especially to certain experiments with rats conducted at Ohio State University by Scott and Erf,[2] who concluded that milk subjected to heat loses its growth-promoting property. The fallacy of the conclusions drawn from these experiments was pointed out in a previous editorial.[3]

Perhaps the most convincing answer to the question Do children who drink raw milk thrive better than children who drink heated milk? has been provided by the extensive field study recently conducted by workers of the United States Public Health Service.[4] The state health departments of Alabama, Mississippi, Florida, Georgia, North Carolina, Kentucky, Texas, Missouri, Oregon and Washington cooperated with the workers of the United States Public Health Service in an intensive survey in thirty-nine cities in these states. The survey methods were standardized. Workers of the United States Public Health Service visited the various cities and assisted the local personnel in carrying out the survey under uniform conditions. A study of the returns soon indicated that the number of children who had received no heated milk whatever was practically negligible. Therefore, it was decided to place in the raw-milk group those children who had received raw milk for more than half their lives, including the latter half, and to place in the heated-milk group those children who had received heated milk for more than half their lives, including the latter half. Under heated milk was included pasteurized milk, boiled milk, evaporated milk and milk powder. Children receiving sweetened condensed milk were excluded, as it has been held that such children tend to be abnormally heavy.

A study of more than 3,700 children, from 10 months to 6 years of age, did not reveal any significant difference between the average weight of children who had received only heated milk, and the average weight of children who had received raw milk for more than the latter half of their lives. The average weight of the heated-milk group was 33.2 pounds (15 Kg.); the insignificant difference favored the children who had received only heated milk. There was no significant difference between the average height of children who had received only heated milk and the average height of children who had received raw milk for more than the latter half of their lives, the respective heights being 37.5 and 37.4 inches (95.2 and 94.9 cm.); the insignificant difference favored the children who had received only heated milk. The age-weight and age-height curves were not significantly affected by the race distribution or financial status of the parents of the two groups of children.

Supplementary foods were included in the dietary of practically all the children soon after weaning. The fact that American children do not live exclusively on milk except for the first few weeks of life renders it hazardous to draw any conclusions as regards infant nutrition from studies on rats that have been fed an exclusive milk diet. The supplementary foods fed to the two groups of children were essentially the same, except in the case of cod liver oil. The children receiving only heated milk were given cod liver oil during an average of 41.6 per cent of their lives, while the children receiving predominantly raw milk received cod liver oil during an average of 27.6 per cent of their lives. This interesting observation might be regarded as an explanation of the slightly greater weight of the heated-milk group. In order to investigate this possibility it was decided to regroup the children who had received heated milk on the basis of the cod liver oil intake. A comparison of the average weight of the children who had received cod liver oil for more than half their lives with the average weight of those who had received no cod liver oil at all revealed the negligible difference of 0.1 per cent.

The incidence of diphtheria among 1,875 children who had received heated milk only was 17.1 per thousand, while the incidence of diphtheria among 1,762 children who had received predominantly raw milk was 22.7 per thousand. The incidence of scarlet

1. Frank, L. C., and Moss, F. J.: The Extent of Pasteurization and Tuberculin Testing in American Cities of 10,000 Population and Over, mimeographed publication issued by U. S. Public Health Service, 1932.
2. Scott, Ernest, and Erf, L. A.: Ohio Tests Prove Natural Milk Is Best, Jersey Bull. & Dairy World, Feb. 11, 1931.
3. Raw Milk Versus Pasteurized Milk, editorial, J. A. M. A. **97**: 1005 (Oct. 3) 1931.
4. Frank, L. C.; Clark, F. A.; Haskell, W. H.; Miller, M. M.; Moss, F. J., and Thomas, R. C.: Do Children Who Drink Raw Milk Thrive Better than Children Who Drink Heated Milk? Pub. Health Rep. **47**: 1951 (Sept. 23) 1932.

fever in the heated-milk group was 23.0 per thousand, as compared with an incidence of 41.4 per thousand in the raw-milk group. Excluding diarrhea, which probably includes many mild cases not referable to milk, the incidence of intestinal disturbances in the heated-milk group was 111.0 per thousand, compared with an incidence of 196.0 per thousand in the raw-milk group. Scurvy occurred in only three instances, two in the heated-milk group and one in the raw-milk group. Rickets occurred in the case rate of 31.5 per thousand in the heated-milk group and 51.1 per thousand in the raw-milk group; this unexpected finding was thought to be related to the increased cod liver oil intake of the heated-milk group.

This comprehensive survey indicates that the growth-promoting capacity of heated milk is not measurably less than the growth-promoting capacity of raw milk.

METHIONINE IN PROTEINS

The most complex substances with which the biochemist has to deal, the proteins, have been subjected to many analytic procedures in the laboratory. As time goes on, more new and accurate information on the composition of these substances becomes available. The stimulus for these repeated attacks on the structure of the proteins lies in the fact that these compounds have long been recognized to be of prime importance to the welfare of living organisms. Although the characteristic element in the molecule is nitrogen, much attention has been given to the sulphur that occurs in most proteins. This element was discovered in protein in the eighteenth century by Scheele and de Fourcroy, and it has always elicited considerable interest on the part of both the analytic chemist and the physiologist. In 1888, Krüger observed that sulphide sulphur can be demonstrated in protein by heating with fixed alkali, but it was not until 1899 that Mörner obtained the sulphur-containing amino acid cystine from the hydrolysis products of protein.

Cystine has been known as an organic compound since its discovery in urinary calculi by Wollaston in 1810, and the demonstration that it was one of the constituent amino acids in protein seemed to explain the presence of sulphur therein. It was soon observed, however, that the sulphur attributed to the contained cystine did not account for nearly all the total sulphur in the protein molecule. Although this observation alone does not necessarily indicate that there are other forms of sulphur in protein, the discovery of methionine, a hitherto unknown amino acid, by Mueller [1] in 1921, provided cogent evidence that protein may contain sources of sulphur other than cystine. As might be expected, progress along the line of differentiation of protein sulphur has, of necessity, awaited a suitable method for the determination of methionine in proteins. The recent report of Baernstein [2] on the estimation of methionine has therefore aroused considerable interest. The method depends on the measurement of methyl iodide evolved when the protein is heated with hydriodic acid. It has been applied to the analysis of a large number of pure proteins [3] and the results show that the methionine content of the samples employed ranges from 27.6 per cent of the total sulphur in arachine from peanuts to 84 per cent in casein. Furthermore, it appears from these analyses that in most of the proteins studied, practically all the constituent sulphur is accounted for by the cystine, cysteine and methionine contained therein.

The delimitation of the methods employed and the strict differentiation between the forms of sulphur in the protein are admittedly imperfect at present. This fact does not, however, detract from the significance of recent observations on the partition of sulphur in the protein molecule which attach new importance to methionine from the quantitative point of view. Added to this is the recent observation of Jackson and Block [4] that the requirement of the animal body for the indispensable amino acid cystine can be satisfied by methionine.

Many of the studies that have been carried out with cystine will have to be repeated along similar lines with methionine before the full significance of the sulphur in proteins is appreciated. An important step in the fuller appreciation of the biochemical relationships of proteins has again been based on a satisfactory, though tentative, analytic method.

1. Mueller, J. H.: Proc. Soc. Exper. Biol. & Med. **18**: 14, 1921.

2. Baernstein, H. D.: J. Biol. Chem. **97**: 663 (Sept.) 1932.
3. Baernstein, H. D.: J. Biol. Chem. **97**: 669 (Sept.) 1932.
4. Jackson, R. W., and Block, R. J.: J. Biol. Chem. **98**: 465, 1932.

"BAD DRUGS AND THE LAW"

Under the title "Bad Drugs and the Law," Arthur Kallet and F. J. Schlink in the *Nation* for October 19 consider three subjects—"Ergot," "Ether" and "Prescriptions." The article on ergot opens with this statement:

> "For an extra profit of half a cent, American drug manufacturers have helped dig the graves of thousands of women dead of hemorrhage in childbirth."

Possibly—but not probably—more fantastic falsehoods have appeared in reputable magazines than the one just quoted. Kallet and Schlink, who should know better, have apparently swallowed, hook, line and sinker, the preposterous and fantastic publicity which the Ambruster clique has been trying to get into newspapers and magazines for several years. It will be remembered that Ambruster owned some Spanish ergot and became considerably worked up because of difficulties in advertising and selling it. This entire matter was discussed in detail in a special article published in THE JOURNAL, Sept. 6, 1930, entitled "Ambruster, Rusby—and Ergot."

In opening their paragraph on ether, Kallet and Schlink say:

> "Next to its toleration of sub-standard ergot, we know of no more inexcusable and intolerable abuse of public confidence than the negligence and callousness that have characterized the administration's handling of the problem of impure ether sold to hospitals for anesthetic use."

This statement is just as ridiculous as the one on ergot. These gentlemen fail to support their charges with any good evidence that any patient has been harmed through the administration of substandard ether. Any competent physician or anesthetist can tell when a patient is anesthetized, and medical literature supplies few if any established cases of poisoning by impure ether.

On the subject of "Prescriptions," Kallet and Schlink state, in effect, that because of the small number of prescriptions that many druggists have to fill, drugs that deteriorate by keeping are used "month after month, even for years, until the last dead drop is gone." They state, further, that "a large percentage of prescription compounds, including both those prepared by the druggist himself and those purchased from drug houses, depart from the legal standards set in the United States Pharmacopeia and the Formulary." They state, also, by implication, that probably more than two thirds of the prescriptions that are compounded throughout the United States are "improperly filled or filled with weak drugs, or drugs of excess potency." However, Kallet and Schlink do not blame the individual druggist for this state of affairs but do blame the "drug and prescription dispensing system which mixes a minor profession with a major business."

That substandard drugs have occasionally been sold and are being sold is doubtless true; probably it will continue to be true, in spite of all that officials may do to the contrary. Most Americans are familiar with the practical impossibility of enforcing laws in regard to one single drug, alcohol, notwithstanding the enormously expensive machinery that has been set up for the purpose. How, then, may the officials whose duty it is to enforce the Food and Drugs Act be expected to guarantee the enforcement of the law on the thousands of other drugs, with an insignificant machinery and relatively microscopic budgets? Our food and drug officials appear to have taken uniformly the one practical method of minimizing such evils, namely, by securing the cooperation of the manufacturers and dealers themselves. Druggists and drug manufacturers, on the whole, are not recruited from the criminal population but are respectable people who generally try to do right and will avoid wrong if it is pointed out to them.

"Substandard" drugs do not necessarily mean deliberate adulteration; drugs are subject to deterioration, variations of crude supply, and similar influences. Much more can be accomplished by finding means to correct the underlying causes than by attempting the quite impossible plan of having the government check every retail sale at every drug store. Fortunately, the great majority of the departures from the official standards are not of such a degree or kind that they menace the health of the purchaser. Any that might be dangerous doubtless call forth direct action by the Food and Drug Administration as soon as they are discovered. The psychology of fear and alarm which the authors of this article try to engender is quite unjustified and altogether reprehensible. Mr. Schlink, of Consumers Research, Inc., knows better and should not have let himself into sponsoring such an article.

Current Comment

DEFORMATION OF THE PUPIL AS A SIGN OF DEATH

The problem of distinguishing with absolute certainty between real and apparent death is one that has given physicians concern since the earliest times. The average person has a subconscious fear of being buried alive, not realizing of course that there are numerous methods of determining with certainty the fact that life has departed. There are many well known methods, including auscultation of the heart with the stethoscope, the determination that respiration has ceased by holding a mirror before the mouth, the absence of stasis of blood in the part of a limb above a ligature, the general examination of the appearance of the patient, the presence of rigor mortis, the cold feeling of any portion of the body without circulation, the injection of dyes, such as fluorescein, into the circulation, and the appearance of the dye in the eye and similar highly technical methods. There is also the possibility of study of the movement of blood in the capillaries and the other peripheral changes in the circulation, as described by Kahn.[1] Notwithstanding the use of all these methods, the subject continues to be studied with a view to developing a method easily used, applicable under almost any circumstances and with a much higher degree of certainty than adheres to any of those that have been mentioned. Recently an Italian physician, Lanfranco Tonelli,[2] has described a technic based on deformation of the pupil, which seems to have considerable merit. There are, of course, other tests related to the eye which are of interest. The eye may fail to react to light, although in some diseases sluggish reactions are frequent. In most diseases, just before death the pupil dilates widely. A glazed pupil or the presence of film over the eye is considered a fatal sign. In a living person or in one who is apparently dead, according to Tonelli, strong pressure applied with the fingers to two or more sides of the eyeball will not produce any modification of the round contour of the pupil. In a dead person, however, bilateral or multilateral pressure applied to the eye, even though slight, will produce an

1. Kahn, M. H.: A New Vascular Sign of Death, Am. J. M. Sc. **168**: 890 (Dec.) 1924.
2. Tonelli, Lanfranco: Deformation of the Pupil as a Sign of Death, Policlinico **39**: 205 (Feb. 8) 1932.

easily observable deformation of the pupil. Under such circumstances, according to Tonelli, the pupil becomes oval, triangular or polygonal, depending on the directions in which the pressure is applied. He reports that he himself applied the method in 649 cases in which the test was frankly positive, and in six cases of apparent death in which the test was negative. These included four cases of syncope following anesthesia, one following the injection of neoarsphenamine, and a sixth in which a man had apparently succumbed to pulmonary tuberculosis. In this case the test was negative at the time it was performed. The man died ten days later, and immediately after death application of the test was positive. The table of 649 cases does not include any instances of stillbirth, although these would seem to be ideal cases in which the method could be used to advantage.

CHILD HEALTH AND THE DEPRESSION

THE JOURNAL has pointed out previously that economic depression with lowered incomes results in malnutrition, exposure to the elements, and postponement of suitable medical and surgical attention to disease in its earliest stages. Another serious effect has been the inability of various communities to carry out the usual systematic inspection of school children and, indeed, much of the technic associated with the control of communicable diseases. In some communities the number of school physicians and school nurses has been greatly reduced. In this emergency it has been suggested that the medical profession offer, without question of remuneration, to make suitable physical examinations of children entering school, or at any time during the school year, and to notify parents promptly of the presence of correctable defects or controllable disease. The medical profession has from time immemorial assumed the obligation of treating disease without remuneration from those unable to pay in times of distress or in times of prosperity. Now enters the question of practicing preventive medicine when health departments fail to do so. The plans, as suggested, have the merit of bringing children and their parents directly into contact with the family physician. The measure is especially important in providing evidence that the family physician can take care of most of the complaints that afflict mankind at a lower cost than they can be handled by any other means and probably with better satisfaction to the majority of patients. The organized medical profession has insisted repeatedly that maintenance of this personal contact between the physician and his patients constitutes the basis of any satisfactory medical scheme. It will be interesting to observe how completely physicians enter into the operation of the plans that have been proposed. Moreover, it is important that adequate records be kept of the extent to which parents avail themselves of the proffered service, of the defects discovered and of the number of instances in which such defects are subsequently brought for correction, in order that the utility of this plan, for the benefit both of the public and of the medical profession, may be accurately determined.

Medical Economics

NEW FORMS OF MEDICAL PRACTICE

4. The Bridge Clinic, Tacoma, Wash.

The present medical situation in the state of Washington is a direct development of the administration of the workmen's compensation law. From a theoretical and perhaps somewhat superficial view this law appears to be almost a model one. It provides unlimited medical care through an exclusive state fund for compensation and a state medical aid fund for the provision of medical care. It is the only law in the United States providing for a medical member of the administrative body. There are most elaborate provisions for supervision of all medical work. The law definitely provides that the injured workman shall receive, "out of the medical aid fund, proper and necessary medical and surgical services, at the hands of a physician of his own choice if conveniently located." The law then provides for the closest supervision and specifies bonds to secure performance. It also provides that "every such contract to be valid must provide that the expenses incident to it shall be borne one-half by the employer and one-half by such employees, and that it shall be administered by the two interests jointly and equally." Further significant clauses read: "The acceptance of employment by any workman shall be held to be an acceptance of any existing contract made under the section to which his employer is a party. No contract for medical, surgical, or hospital care of injured workmen entered into prior to the time this act shall go into effect shall be invalidated by anything in this act contained."

Under the clauses quoted, a system of medical care has developed embracing an overwhelming majority of the workers in the leading industries, in which choice of physician has been practically eliminated and in which the employees have no share in the management; indeed, the end-result appears to be a system of private contract health insurance of workers and their families for all ailments.

This latest and most significant development has been accomplished largely by the use of supplemental "medical contracts" covering noncompensable diseases and injuries, into which the employees are compelled to enter as a condition of employment. This explanation has been made as a necessary preliminary to a discussion of one of the largest of these medical organizations.

THE BRIDGE CLINIC

The contract with employers entered into by this clinic reads as follows:

MEDICAL CONTRACT

THIS AGREEMENT, entered into between THE BRIDGE CLINIC, of Tacoma, Washington, party of the first part and..... ..... of ....., Washington, party of the second part;

WITNESSETH: The party of the first part in consideration of the payment by the party of the second part of the sum of money herein mentioned hereby agrees to furnish, perform, and render to the employees of the party of the second part, the following medical service:

HOSPITAL SERVICES: Care in a ward bed of the St. Joseph's or Tacoma General or Tacoma Contagious Hospital as long as necessary, but not to exceed six months, for such conditions as are ordinarily accepted by the management of aforesaid hospital. Private room and private nurse in necessary cases will be furnished at the discretion of the party of the first part.

Operating room, laboratory work, plaster cast, x-rays and all drugs and medicines, will be furnished while at the hospital.

SURGICAL SERVICES: All surgical services for operations or injuries not provided for under the State Compensation Act will be furnished.

SICKNESS: All diseases, including contagious diseases, such as smallpox, diphtheria, scarlet-fever, etc., will be taken care of at the above mentioned hospitals, or at home, or our office.

ADDITIONAL SERVICE: All medicines, drugs, prescriptions at authorized drug stores, crutches, braces, surgical belts, dressings, plaster casts, and splints will be furnished. All necessary laboratory work, X-Rays, including dental X-Ray, and all examinations for glasses (but not including glasses), will be furnished. Insulin will be furnished for a period of six months.

House calls when necessary will be made.

Ambulance service in necessary cases will be furnished.

A physical examination, including dental examination and X-Ray of teeth when necessary, will be given free of charge to the employees and prospective employees when desired by the employer.

First aid training will be given to the safety men of the firm at stated intervals. Necessary first aid kits and supplies will be furnished.

EXCEPTIONS: Venereal diseases, conditions peculiar to sex, and conditions existing before commencing to pay medical fees under this contract.

GENERAL AGREEMENTS: Party of the first part agrees to at all times maintain a staff of at least a Major Surgeon, Physician, Eye, Ear, Nose & Throat Specialist and a Dentist.

Complete X-Ray, Physio-therapy, and Laboratory Departments and 24-hour telephone service will be maintained.

The party of the second part agrees to notify the party of the first part of any sickness or injury requiring medical or surgical services. In no event will the party of the first part pay for services of any physician or surgeon other than those designated by said party of the first part, nor be liable for or pay for any services, bills or expenses, unless authorized and approved by the party of the first part.

When deemed necessary by the party of the first part, services of a specialist to be designated by said first party will be furnished.

PAYMENTS: That the said party of the second part shall collect from each of its employees the sum of ten cents per day for the first ..... days of each month or any fraction thereof that each man in their employ works, and that the moneys so collected is a trust fund as provided by Chapter 136 of the Session Laws of 1929, and that the second party shall hold same in trust and pay same to the party of the first part on or before the 20th day of the month following collection.

This contract shall become effective ..... and continue for a period of ..... years.

THE BRIDGE CLINIC
Party of the First Part.
By.....
.....
Party of the Second Part.
By.....

Information furnished about one year ago indicates that Dr. A. W. Bridge, whose headquarters are at 744 Market Street, Tacoma, has offices in Seattle and Eatonville and associate physicians in twenty-five other points in Washington. The Bridge organization, as reported on March 14, 1931, included thirty-six physicians and two dentists. The 1931 American Medical Directory shows that, of the thirty-six physicians named as members and/or associates of the Bridge Clinic organization, twenty-six were members of their county and state medical societies and the American Medical Association and twenty-two were Fellows of the American Medical Association. Ten physicians were not members of their county medical societies.

The following was the personnel of the Bridge Clinic as of March 14, 1931:

THE BRIDGE CLINIC
744 Market Street,
Tacoma, Wash.

Dr. A. W. Bridge, Surgeon
Dr. I. A. Drues, E. E. N. & T. Specialist
Dr. W. L. Ross, Genito-Urinary Specialist
Dr. D. B. Cook, Dentist
Dr. E. C. Muir, Internal Medicine

THE BRIDGE CLINIC
220-23 Cobb Building,
Seattle, Wash.

Dr. John P. Pieroth, Physician and Surgeon
Dr. F. H. Schroeder, Physician and Surgeon
Dr. I. V. Frankenberg, Dentist
Dr. J. E. Clark, E. E. N. & T. Specialist
Dr. C. F. Eikenbery, Consulting Orthopedic Surgeon

EATONVILLE HOSPITAL
Eatonville, Wash.

Dr. C. E. Wiseman, Physician and Surgeon
Dr. W. J. Glovatsky, Physician and Surgeon

OTHER ASSOCIATE DOCTORS:

Dr. H. G. Miller, Port Townsend
Dr. Frank Granat, Rainier and Yelm
Dr. A. D. Hall, Wilkeson
Dr. H. W. Hall, Fairfax
Dr. C. B. Ritchie, Morton
Drs. D. E. McGillvary and Taylor, Port Angeles
Dr. M. P. Graham, Aberdeen
Dr. F. L. Neeley, Shelton
Dr. J. J. O'Leary, Olympia
Dr. A. L. Brandt, Mineral
Dr. Geo. Smith, National (Ashford)
Dr. N. D. Towers (G. N.?), Roy
Dr. E. S. West, Yakima
Dr. J. F. Sigafoos, Orting
Dr. Geo. W. Manning, Chehalis
Dr. F. W. Wickman, Tenino
Dr. F. H. Grandy, Burton
Dr. W. R. Scott, Centralia
Dr. D. A. Hewitt, Spokane
Dr. A. MacRae Smith, Bellingham
Dr. A. B. Shaw, Longview
Drs. H. C. Leiser and R. L. Leiser, Vancouver
Dr. A. H. Gunderson, Everett
Dr. F. G. Ulman, Enumclaw
Dr. J. F. Sigafoos, Kapowsin

MERITS OF THE PLAN

1. It gives a sort of medical service to some patients who, because of their isolated location and economic condition, might otherwise receive even less medical attention. This insufficiency of service, in some cases at least, is due to similar contract arrangements in connection with workmen's compensation which, by compulsory monopolization of industrial cases, has made it impossible for independent practitioners to exist in certain localities.

2. It apparently gives a limited hospital, specialist and laboratory service to some who might not otherwise obtain such service except through charity.

3. It seems to distribute a part of the cost of medical care so that the individual burden is less crushing.

DEFECTS OF THE PLAN

1. This, and other similar plans, depend on compulsory assignment of patients to physicians controlled by an organization in whose management the patients have no share.

2. The competition developed because of such schemes leads to underbidding, solicitation and even more questionable methods of securing compulsory patronage. When financial arrangements are made through employers, not personally affected by the medical care given, the tendency is to emphasize financial consideration at the expense of the character of the service. The quality of medical service under such conditions often becomes secondary.

3. Medical service, when provided through such schemes, is not distributed according to the needs of patients or localities but according to the interests of employers and the location of industries. This leaves those outside the scope of such industries without adequate medical care, since the competition of contract physicians, backed by the monopoly conferred by compulsory patronage, often makes it impossible for individual practitioners to exist. This arrangement also removes any check on the character of service through comparison based on free choice—a check which has always been considered of primary importance in maintaining professional standards.

4. If those outside such plans are forced to accept the services of physicians belonging to the plan, because no others are available, not only is their right of free choice of physician destroyed but also their financial arrangements with such physicians are affected by the working of the plan. The fees in such cases would almost certainly be subject to some arrangement with the managers of the plan, in the fixing of which the patients have no voice.

5. There seems to be no provision by which the organized medical profession has any voice in fixing the standards of service or supervising the ethics involved in the relations between physicians and patients. As such schemes expand, they tend to divide the profession first into two factions composed of contract physicians on the one side and individual practitioners on the other, and, second, into a further division into competing contract groups.

6. The economic soundness of plans of this type is open to serious question. There is an overlapping and interlocking of industrial and supplemental contracts as well as of private practice excluded from contract coverage, which makes it almost impossible to isolate the operations of any one scheme or to determine to what extent each one stands on its own economic base.

Association News

MEDICAL BROADCAST FOR THE WEEK
American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:40 to 10:45 a. m. (central standard time) over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

October 31. The Wicked Witch Know-Naught.
November 2. The Father of Surgery.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 10:40 to 10:55 over Station WBBM.

The subject for the week is as follows:

November 5. Fall Health Hazards.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—Dr. Charles J. Bloom, New Orleans, addressed the Calhoun County Medical Society at Anniston, recently, on "Various Phases of Rickets."——Dr. James L. Bibb, Chattanooga, Tenn., was the guest speaker before the Jackson County Medical Society, Scottsboro, October 4, on heart disease.

CALIFORNIA

Symposium on Heart Disease.—The third annual graduate symposium on heart disease, offered by the heart committee of the San Francisco County Medical Society and the San Francisco Tuberculosis Association, will be held, November 16-17. The course will consist of lectures and discussions with clinical demonstrations.

White House Conference on Child Health.—The California White House Conference on Child Health and Protection will be held in San Francisco, November 11-12. Following the state meeting at San Francisco, district conferences will be held at Los Angeles, Oakland, Fresno and Sacramento. Later, conferences will be held in counties and communities. It is planned to carry the program over a two year period.

University News.—Three new department chairmen were appointed recently to the University of California Medical School, San Francisco: Dr. Ian M. Thompson, replacing Dr. Herbert M. Evans in the department of anatomy; Col. Cosam J. Bartlett, succeeding Col. William A. Powell in medico-military science and tactics, and Alexander M. Kidd, LL.B., in legal medicine. Dr. Dudley W. Bennett was appointed director of student health service at the university, and Dr. Sanford V. Larkey, librarian.

DISTRICT OF COLUMBIA

Washington Centennial Meeting.—The Medical Society of the District of Columbia devoted its meeting, October 12, to an observance of the George Washington bicentennial celebration. The speakers were Drs. Wyndham B. Blanton, Richmond, Va., on "Medical Knowledge of Washington, and Its Sources"; John B. Nichols, "Medical Appraisal of George Washington," and Walter A. Wells, "Final Illness of George Washington." It is said that one of Washington's most intimate associates, Dr. Elisha Cullen Dick, Alexandria, was one of the society's original members, having joined in 1817, the year of its organization.

ILLINOIS

Personal.—Dr. James J. Donahue was appointed supervisor of medical and health service in the public schools of East St. Louis, effective September 14.——Dr. and Mrs. M. D. Empson, Harco, observed their golden wedding anniversary, October 2.

Clinics for Handicapped Children.—A resolution was passed at a meeting of the council of the Illinois State Medical Society, September 12, providing for a definite program, to be referred to all component county societies, for the care of the physically handicapped children in the state. Constituent societies desiring to offer such service will be assisted by the state society. According to the plan, a qualified staff of clinicians will be available to societies that wish to hold clinics, but the arrangements will be made by the local society. A list of physically handicapped children in each county has been made available through a survey recently completed by authority of the state legislature.

Chicago

Personal.—Dr. Gustavus M. Blech has been awarded the diploma and decoration of the ancient Belgian Order of St. George, with the grade of commander.——H. A. Swenson, Ph.D., has been promoted to assistant professor in the department of psychology, Division of Biological Sciences, University of Chicago, effective October 1.

Dedicate Sanatorium for Children.—The new La Rabida Jackson Park Sanatorium, where free treatment will be given to children with heart disease, was dedicated, October 18. The new sanatorium, according to newspaper accounts, is a replica of the La Rabida building of the 1893 World's Fair, which was a reproduction of the famous hotel at Palos, Spain, where Columbus planned his voyage leading to the discovery of America. Among the articles placed in the cornerstone by Mrs. Louis T. Orr, president of the sanatorium board, were a list of the donors, year books of the organization, and the first quarter dollar minted in 1932. Speakers included Drs. Robert A. Black, medical director of the sanatorium; Herman N. Bundesen, president of the Chicago board of health, and Morris Fishbein, editor of THE JOURNAL. The new building cost about $300,000, and has accommodations for 175 children. Thirty were accepted for treatment, October 21.

Auxiliary Sponsors Symposium.—The Woman's Auxiliary to the American Medical Association will sponsor a symposium by members of the staff of the scientific crime detection laboratory of Northwestern University, November 2, at Lincoln Hall, 357 East Chicago Avenue. The speakers and their subjects will be:

Col. Calvin H. Goddard, Identification of Firearms.
Mr. Carlton Hood, Microscopy: Identification of Hairs and Fibers and Other Microscopic Evidence, and Photography of Evidence.
Leonarde Keeler, Methods for Detecting Deception.
Clarence W. Muehlberger, Ph.D., Chemistry of Toxologic Evidence.

Physicians and their friends are invited. There will be an exhibit of weapons. The Woman's Auxiliary will give a reception and tea in honor of state and national officers, November 17, from 2:30 to 4:30, at the Chicago Woman's Club. Mrs. Walter J. Freeman, Philadelphia, national president, will make an address.

INDIANA

Society News.—The Third District Medical Society was addressed in Bedford, October 12, among others, by Drs. Marvin L. McClain, Scottsburg, on "Severe Abdominal Pain with Differential Diagnosis," and Harrison C. Ragsdale, Bedford, "Medical Economics."——Dr. Robert B. Preble, Chicago, addressed the Tippecanoe County Medical Society, October 13, on angina pectoris.——The Gibson County Medical Society, Princeton, heard Dr. Horace M. Banks, Indianapolis, October 10, in a discussion of the laboratory as applied to present-day diagnosis. Dr. Cleon Nafe, Indianapolis, will address the society, November 14, on intestinal obstruction.——Dr. Willis D. Gatch, Indianapolis, addressed the Muncie Academy of Medicine, October 11, on "New Developments in Abdominal Surgery."——Dr. Max S. Wien, Chicago, addressed the Fort Wayne County Medical Society, October 11, on "Skin Conditions Seen in General Practice."

Typhoid Traced to Carriers.—Three recent outbreaks of typhoid in Indiana were traced directly to carriers, the September bulletin of the state board of health reports. In one outbreak, it was disclosed that five cases in one family were traced to a visiting relative, later determined to be a carrier. Twelve of thirteen persons in an outbreak in Valparaiso had been in contact with one eating place. Examination of employees at the restaurant and on the dairy farm from which the restaurant obtained milk disclosed a typhoid carrier on the farm and a carrier of paratyphoid A and B at the restaurant. In an outbreak at Terre Haute of eight cases, investigation showed that five of the persons were on one milk route, while the other three apparently had no connection with any milk supply. A carrier, engaged in the handling and distribution of milk, was discovered during the examination of employees connected with this milk route. There is more typhoid in Indiana this year than for several years past, the bulletin points out. In the past two months 265 cases have been reported to the state board of health, as compared with 128 for the same period last year.

KANSAS

Society News.—Mr. Earnest Boyce, Lawrence, director of sanitation of the state board of health, addressed the Douglas County Medical Society, Lawrence, recently, on "Water Sanitation and Methods of Testing and Treating City Water."——Speakers before a joint meeting of the Wyandotte and Jackson county medical societies, October 4, included Drs. John H. Musser, New Orleans, "Subacute Bacterial Endocarditis"; Barney Brooks, Nashville, Tenn., "Surgical Treatment of Arterial Aneurysm of the Extremities," and Vernon C. David, Chicago, "Some Studies Related to Peritonitis."——Speakers before the Harvey County Medical Society in Newton, September 5, included Drs. Melvin C. Martin and Richard S. Haury on "Fascial Space Infections of the Leg"; George A. Westfall, Halstead, "Diagnosis of Diseases of the Esophagus," and Vern L. Pauley, Halstead, "New Method of Treatment of Prostatic

Hypertrophy."——Dr. Clyde D. Blake, Hays, among others, addressed the Rush-Ness County Medical Society in Alexander, September 15, on "Diagnosis of Surgical Cases."——Dr. James A. Wheeler, Newton, addressed the Shawnee County Medical Society, September 5, on birth injuries.——At a meeting of the Southeast Kansas Medical Society in Independence, September 6, Oklahoma City physicians presented the program: Drs. Earl D. McBride and Ephraim Goldfain, "Arthritis, Present Day Clinical and Treatment Conception, Including Vaccine Methods"; Henry H. Turner, "Anterior Pituitary Growth and Sex Hormones," and Herbert J. Rinkel, "Allergy and the General Practitioner."

KENTUCKY

Society News.—Dr. James Duffy Hancock, Louisville, addressed the Shelby County Medical Society, Shelbyville, September 15, on "Surgical Diseases of the Cervical Lymphatics."——Dr. Samuel A. Overstreet addressed the Jefferson County Medical Society, Louisville, October 17, on "Differential Diagnosis and Treatment of Chronic Colitis."

State Medical Election.—Dr. W. M. Martin, Harlan, was named president-elect of the Kentucky State Medical Association at its meeting in Louisville, October 6. Dr. Philip F. Barbour, Louisville, was installed as president, succeeding Dr. James T. Reddick, Paducah. Drs. Charles W. Hibbitt, Louisville, William T. Little, Calvert City, and Joseph E. Johnson, Stone, were elected vice presidents. The 1933 session will be held in Murray.

LOUISIANA

Proposed "Public Health Institute" Condemned.—The Orleans Parish Medical Society at a meeting, October 10, unanimously condemned as unethical a "public health institute" being organized in New Orleans. In compliance with a motion unanimously passed, any member of the society who connects himself with the institute will be liable to expulsion from the society.

Annual Fall Clinic.—Shreveport's third annual fall clinic was held, October 4-6, at the Shreveport Charity Hospital. The subjects discussed in the surgical clinics included cancer of the rectum, Dr. John A. Hendrick; malignant conditions of the female generative organs, with special reference to diagnosis and types of cancer, Dr. Owen C. Rigby; technic of pneumothorax, Dr. Charles R. Gowen; conservative sinus surgery, Dr. Dorf Bean; laparotomy, Dr. Walter S. Harmon; peroral endoscopy, Dr. Levin W. Gorton, and fundamental principles of urinary infections, Dr. Jesse R. Stamper. In the obstetric department, Dr. Harvey T. Best covered surgical obstetrics. One session was devoted to internal medicine and allied branches and x-rays. Speakers at other sessions included:

Dr. James S. McLester, Birmingham, Ala., on Nephritis: The Outlook in Its Several Forms and the Treatment.
Dr. Alton Ochsner, New Orleans, Management of the Ruptured Appendix.
Dr. Marion D. Hargrove, Management of Uncomplicated Diabetes at Home.
Dr. Arthur A. Herold, Metabolic Diseases, with clinic.
Dr. Robert T. Lucas, Diarrheas Associated with Infections Outside of the Intestinal Tract.
Dr. Thomas P. Lloyd, Endocrinology.
Dr. Augustus J. Thomas, Radiographic Researches of Pregnancy, Featuring the Early Diagnosis.
Dr. Roy C. Young, Mumps Encephalitis: Report of Case with Bilateral Optic Neuritis, Rapid and Complete Blindness and Complete Recovery.
Dr. Jason P. Sanders, Caspiana, Chemotherapy of the Cinchona Alkaloids.
Dr. Wyeth B. Worley, Pyelitis in Children.

MASSACHUSETTS

Personal.—Dr. Gilbert Horrax has been appointed to the permanent staff of the Lahey Clinic, Boston, as neurologic surgeon. Dr. Frank N. Allan, formerly of Rochester, Minn., will join the staff, November 1, in general medicine.——Dr. Martin H. Spellman has been appointed medical examiner of the Boston fire department.

Society News.—Dr. Joel M. Melick, Worcester, addressed the Wachusett Medical Society, September 21, on "Repair of Both Old and New Perineal Lacerations Immediately Following Delivery."——A symposium on the general practitioner's rôle in preventive medicine constituted the program of the Worcester District Medical Society at its meeting, October 12.

Courses on Mental Hygiene.—The division of university extension of the state department of education and the Massachusetts Society of Mental Hygiene inaugurated a series of courses, each consisting of eight lectures, October 19. Dr. Abraham Myerson opened the series with a course on "Human Nature and Society." Others began, October 24, on "Normal Youth and Its Everyday Problems," and October 25, "Practical Mental Hygiene." One on "Mental Hygiene and Adolescence" will start, November 1. Lecturers will include Drs. Douglas A. Thom, Henry B. Elkind and Samuel W. Hartwell, and Misses Martha Chandler, Ruth M. Faulkner, Elizabeth W. Amen and Sybil Foster.

Lectures at Tufts.—The 1932-1933 program of lectures for the William Harvey Society of Tufts College Medical School, Boston, opened, October 7, with Dr. Francis Carter Wood, director of Crocker Institute of Cancer Research, Columbia University, as the speaker. His subject was "The Research Side of Cancer." Dr. Hubert Ashley Royster, Raleigh, N. C., will give the second lecture, November 4, on "The Tragedy of Appendicitis." Lecturers in subsequent programs will include Drs. Samuel J. Kopetzky, professor of otology, New York Polyclinic Medical School; Morris Fishbein, Chicago, editor of THE JOURNAL; Lawrason Brown, Saranac Lake, N. Y.; Albert Warren Stearns, dean, Tufts College Medical School; Burrill B. Crohn, Post-Graduate Medical School of Columbia University, New York; Ralph Pemberton, University of Pennsylvania Graduate School of Medicine, Philadelphia, and Martin E. Rehfuss, Jefferson Medical College, Philadelphia.

MINNESOTA

Courses on Tuberculosis.—As a part of its educational campaign against tuberculosis, the Minnesota Public Health Association recently conducted a short course in tuberculosis in Wabasha. Physicians from Wabasha, Winona, Houston and Fillmore counties attended. Dr. Jay Arthur Myers, professor of preventive medicine and public health, University of Minnesota Medical School, Minneapolis, began a course of seventeen weekly lectures on tuberculosis for graduate physicians, October 6. The course will include diseases of the lungs; diagnosis and treatment of septic conditions; demonstrations of iodized oil administrations; treatment of bronchial asthma associated with hay fever; diagnosis of pneumoconiosis; carcinoma of the lung.

Society News.—Tuberculosis was the subject for discussion at the recent annual meeting of the Redwood-Brown County Medical Society.——At the meeting of the Southwestern Minnesota Medical Society in Pipestone, September 20, the speakers were Drs. Thomas J. Billion on hypothyroidism; Monte A. Stern, appendicitis in children; Guy E. Van Demark, foot posture, and Nelius J. Nessa, roentgen studies in diseases and injury of joints. All the speakers were from Sioux Falls, S. D.——The Minnesota Medical Alumni Homecoming was held, October 28, in the Eustis Auditorium, Elliot Hospital, Minneapolis.——The Minnesota Academy of Medicine prize essay was presented, October 12, by Byron J. Olson, Minneapolis, on "Rôle of the Eosinophil in Immune Reactions." Dr. Frederick C. Rodda, Minneapolis, presented a thesis on "Intussusception" at this meeting and Dr. Charles N. Spratt, Minneapolis, spoke on "Intracranial Aneurysms of Both Vertebral Arteries."——Hermann Ranke, Ph.D., of the University of Heidelberg, will discuss "Surgery in Ancient Egypt" before the Hennepin County Medical Society, Minneapolis, November 7.

MISSISSIPPI

Society News.—The Eighth Councilor District Medical Society was addressed in Macomb, October 11, among others, by Drs. Robert A. Strong, on "Aspiration Treatment of Empyema in Children"; Narcisse F. Thiberge, allergy; Francis E. Le Jeune, hoarseness; Gilbert C. Anderson, diagnosis and localization of brain tumors, and John H. Musser, management of thyroid disease; all the speakers were from New Orleans.——Dr. James S. McLester, Birmingham, Ala., conducted a clinic before the Pike County Medical Society, September 1.——Dr. John A. Beals, Greenville, addressed the Delta Medical Society in Greenwood, October 12, on modern urographic methods.——At a meeting of the South Mississippi Medical Society in Laurel, September 8, the speakers included Drs. Benjamin F. Hand, Waynesboro, "Mitral Regurgitation"; Edgar Burns, New Orleans, "Tumors of the Bladder," and Lucian H. Landry, "Stricture of the Esophagus."——Among others, Dr. William A. Toomer, Tupelo, spoke before the North-East Mississippi Thirteen County Medical Society, September 20, on "Pulmonary Hemorrhage with Special Reference to Treatment," and Dr. Samuel K. Gore, Mantee, "Diabetes Mellitus."——Dr. Benjamin S. Waller, Silvercreek, among others, addressed the Tri-County Medical Society in Monticello, September 13, on pellagra.

MISSOURI

Hospital News.—Use of one wing of the Menorah Hospital, Kansas City, exclusively for the treatment of cancer, especially by radium, has been made possible by a fund of $10,000 collected by the woman's auxiliary of the hospital. Nine radium needles were purchased and donated to the hospital. A committee meets each week to study patients treated during that week.

Guest Speakers Before Local Societies.—Sir George Lenthal Cheatle, London, addressed the Kansas City Academy of Medicine, October 22, on "Etiology, Pathology and Treatment of Cancer of the Breast." Dr. Hugh H. Young, clinical professor of urology, Johns Hopkins University School of Medicine, Baltimore, is giving an address in Kansas City, October 29, on "Surgery of the Prostate." The occasion is a joint meeting of the Jackson and Wyandotte county medical societies, the Kansas City Academy of Medicine and the Kansas City Urological Society.

Tuberculosis Demonstrations.—The St. Louis City Department of Health plans to begin in November a series of clinical demonstrations on methods of detecting incipient tuberculosis, with Dr. Hyman I. Spector, St. Louis, in charge. Sessions will be held in city institutions. The study will include demonstrations of the tubercle bacillus, recognition of early lesions by roentgen examination, methods of percussion, nontuberculous conditions simulating tuberculosis, and evaluation of history and of physical and laboratory examinations. No fee will be charged. Physicians enrolled will be divided into small groups, each group to be in charge of clinicians trained in diagnosis of diseases of the chest.

NEW JERSEY

Health at Trenton.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended October 15, indicate that the highest mortality rate (18.5) appears for Trenton and the rate for the group of cities as a whole, 10.2. The mortality rate for the corresponding week last year for Trenton was 15.2 and for the group of cities, 10. The annual rate for the eighty-five cities for the forty-one weeks of 1932 is 11.1, as compared with a rate of 11.9 for the corresponding period of 1931. The department advises caution in the interpretation of these rates, as weekly figures fluctuate widely, as some cities are hospital centers for large areas surrounding them and as Negro death rates are usually high.

NEW YORK

Society News.—The first district branch of the Medical Society of the State of New York held a stated meeting at the Rockland County Golf Club, October 14, with the following speakers on the scientific program: Drs. Edward M. Livingston, "Neurogenic Basis for Abdominal Symptoms"; Maximilian A. Goldzieher, "The Adrenals in Health and Disease," and Emil Koffler, "Compulsory Health Insurance Abroad."——Dr. Richard Kovacs, New York, addressed the Ulster County Medical Society, Kingston, October 11, on "Physical Therapy in General Practice."——Dr. Milton C. Winternitz, New Haven, Conn., addressed the Medical Society of the County of Albany, October 25, on "Relation of the Laboratory to the General Practice of Medicine."——A course of lectures on traumatic surgery arranged by the Medical Society of the County of Rockland is in progress at Pomona. Lectures were given in October by Drs. John J. Moorhead, Herbert M. Bergamini and David Goldblatt. Addresses will be presented during November by Drs. Emmett A. Dooley, on fractures of the forearm and leg; Henry H. Ritter, burns and infections of the hand; Harry V. Spaulding, abdominal injuries, and Willis W. Lasher, injuries to the joints.

New York City

Annual Report of Hospital Fund.—The fifty-third annual report of the United Hospital Fund shows that during 1931 the fifty-five hospitals associated in the fund expended $27,245,647 in service to patients. Patients paid $18,704,234 and the remainder was expended on patients who paid nothing or only a part of the cost of their care. Approximately 44.6 per cent of the ward service was given free or at less than cost. The average daily expense for all patients was $5.95; the average stay in the hospital, 13.8 days.

Dr. Libman Honored.—Six hundred colleagues and friends of Dr. Emanuel Libman attended a dinner at the Waldorf-Astoria, October 15, in honor of his sixtieth birthday. Among the speakers were Drs. William H. Welch, Baltimore, Maude E. S. Abbott, Montreal, Alexis Carrel, John A. Hartwell, William N. Cohen, James Ewing, Nathan O. Ratnoff and Albert A. Epstein. Three anniversary volumes containing contributions from physicians and scientists of the United States and foreign countries were presented to Dr. Libman.

Society News.—Dr. William Howard Barber addressed the New York Surgical Society, October 12, on "Jejunostomy: A Clinical and Experimental Study of the Technic."——Dr. Donald C. Balfour, Rochester, Minn., addressed the Bedford Medical Society, Brooklyn, October 25, on "Incidence and Manifestations of the Complications of Peptic Ulcer."——The committee on graduate education of the Medical Society of the County of Kings has arranged a course of seven lectures in medical psychology to be given by Dr. Alfred Adler, Vienna, now visiting professor of medical psychology at Long Island College of Medicine. The lectures, which are to be given weekly, will begin early in November.

Sale of "Loose Milk" to Be Prohibited.—The department of health adopted a resolution, October 11, placing a ban on the sale of loose milk, effective June 1, 1933, through an amendment to the sanitary code. Exceptions are made for establishments that use large quantities for cooking or manufacturing and for hospitals and institutions that are expressly exempted. The new law will also permit milk to be dispensed direct to the consumer from a pump or other mechanical device approved by the board of health, but no device has been submitted which meets the requirements, according to Dr. Shirley W. Wynne, health commissioner. This action was taken as a result of an investigation made in 1931 by a special commission. Edward F. Brown, for three years director of the former New York Diphtheria Prevention Commission, was director of the loose milk survey. Members of the commission were Dr. Simon Flexner, scientific chairman; Charles C. Burlingham, lay chairman; Drs. Paul B. Brooks, Albany, Hugh S. Cumming, surgeon general, U. S. Public Health Service, Washington, D. C.; Milton J. Rosenau, Boston; Philip Van Ingen and Henry Dwight Chapin, Bronxville; Mrs. William Randolph Hearst, Miss Lillian D. Wald, Howard S. Cullman, Elmer V. McCollum, Sc.D., Baltimore, and Leland Spencer, Ph.D., of Cornell University.

NORTH CAROLINA

University News.—Dr. Willis C. Campbell, Memphis, Tenn., conducted a clinic on surgery of the joints at Duke Hospital in September, and Dr. William S. Thayer, Baltimore, a clinic on cyanosis, October 15.

Dr. Strong Honored.—Dr. Charles M. Strong, Charlotte, was the guest of honor at a meeting of the Mecklenburg County Medical Society, September 20, marking his seventieth birthday. The society gave him a watch, presented by Dr. George W. Pressly. Among other speakers at the meeting were Drs. Franklin C. Smith, who reported four cases of partial blindness caused by gazing at the recent eclipse of the sun; Hamilton W. McKay, on the use of the cystoscope in treatment of pyelitis in children, and Archibald A. Barron, on anxiety hysteria.

OHIO

New City Hospital in Springfield.—Dr. John H. J. Upham, dean, Ohio State University College of Medicine, Columbus, made the dedicatory address at ceremonies opening Springfield's new city hospital, September 25. Dr. Upham's subject was "The Modern Hospital and Its Relation to the City." The new hospital, built at a cost of $1,800,000, has a capacity of 300 beds, only about half of which will be placed in operation now. The major building of the group is of the double Y type, eleven stories high. The plant also includes a power station and a nurses' home with quarters for 125 nurses.

New Features in Academy Meetings.—The Academy of Medicine of Cincinnati presented, October 24, the first of a program of clinical demonstrations and scientific exhibits which will be given in the afternoons before meetings at which there are out-of-town speakers. The following speakers gave the first demonstrations on the subjects named:

Leon H. Schmidt and Shiro Tashiro, Ph.D., Experimental Gastric Ulcer Due to Bile Salts.
Dr. Ralph G. Carothers, Maggot Treatment of Osteomyelitis.
Drs. Roger S. Morris and Leon Schiff, Use of Gastric Juice in Treatment of Anemia.
Dr. Samuel Brown, Differential Diagnosis of Abdominal Tumors.
Dr. Merlin L. Cooper, Studies of Acute Enteritis in Children.

Dr. Frank Hinman, San Francisco, addressed the evening meeting on "Urogenital Infections."

Course on Respiratory Diseases.—The Cleveland Academy of Medicine has begun a graduate course of lectures on respiratory diseases to be given weekly through the winter. Dr. Gerald S. Shibley gave the first four on the common cold, influenza and lobar pneumonia, and bronchopneumonia. Dr. Richard Dexter will lecture, November 4 and 11, on abscess of the lung and bronchiectasis; Dr. Marion A. Blankenhorn, November 18, on new growths of the lungs and bronchi, and Dr. David Steel, December 2, on roentgen diagnosis and treatment of pulmonary malignant growths. The remainder of the series, which will continue through April 7, will be devoted to tuberculosis with the following speakers: Drs. Raymond C. McKay, Joseph C. Placak, Cleveland; Robert H. Browning, Warrensville; Harold H. Brittingham, Cleveland; Samuel O. Freedlander, Cleveland; James T. Collins, Cleveland; Charles W. Burhans, Lakewood, and Ellery P. Edwards, Cleveland, and Mr. Howard Green, executive secretary, Cleveland Health Council.

Society News.—Dr. Warren T. Vaughan, Richmond, Va., addressed the Montgomery County Medical Society, Dayton, October 7, on allergy as a general medical problem.——Dr. Roy W. Scott, Cleveland, presented a paper before the Stark County Medical Society, Canton, September 13, on clinical and pathologic observations in autopsies in 2,000 cases of heart disease. —— Dr. Harold N. Cole, Cleveland, addressed the Summit County Medical Society, Akron, September 6, on "Management of Syphilis."——Drs. Harold F. Downing and James M. Pierce, addressed the Cincinnati Academy of Medicine, October 3, on cerebral hemorrhage in the new-born and antenatal care, respectively. Drs. Henry M. Goodyear and Edward A. Wagner discussed nasal sinuses and premature births, respectively, at the meeting, October 10. Drs. Roger S. Morris and Vernon B. Roberts spoke on addisin and diverticulitis of the sigmoid, respectively, October 17.——Dr. Harris H. Vail addressed the Cincinnati Otolaryngological Society, October 18, on "Importance of the Great Superficial Petrosal Nerve in Suppuration of the Petrous Apex."——Dr. Daniel J. Davies addressed the Cincinnati Obstetrical Society, October 13, on "Rupture of the Uterus."

PENNSYLVANIA

Hospital News.—A ward for infants has recently been put into service at the new children's building of the Cresson Tuberculosis Sanatorium.

Seminar at Easton Hospital.—The third annual graduate seminar at the Easton Hospital, Easton, for physicians of the city and surrounding communities was held October 12. Speakers and their subjects were:

Dr. George E. Brown, Rochester, Minn., Studies on the Vasomotor System: Possible Application in the Study of Hypertension.
Dr. John F. Erdmann, New York, Nonspecific Granuloma of the Gastro-Intestinal Tract.
Dr. Charles Gilmore Kerley, New York, A Study of the Sinus and Sinusitis in Infants and Children.
Dr. Jesse O. Arnold, Philadelphia, More Rational Methods in the Prevention and Treatment of Eclampsia.

Annual Joint Meeting.—The sixteenth annual joint meeting of the Lehigh, Northampton and Bucks county medical societies and the Lehigh Valley Homeopathic Medical Society was held at the Allentown State Hospital, Allentown, October 11. A symposium on epilepsy was presented by Drs. Harry F. Hoffman, Ethel F. Buchman and Lucy Etta B. Vaughn. Drs. Roy W. Goshorn and Arpad Lindenfeld demonstrated cases of grand mal and petit mal and Drs. Edgar M. Blew and Max Rossman, cases of convulsive attacks in persons who do not have epilepsy. Dr. Helen L. Williams exhibited pathologic specimens.

Society News.— Drs. Douglas P. Arnold, Buffalo, and Herman F. W. Flock, Williamsport, addressed the Lycoming County Medical Society, October 14, on "Convulsions in Infancy and Childhood" and "The Recent Epidemic of Furunculosis of the Ear Canal and Nasal Passages," respectively.——Drs. La Rue M. Hoffman and Walter S. Brenholtz, Williamsport, addressed the Tioga County Medical Society, Wellsboro, September 16, on "Tannic Acid Treatment of Burns" and "The Value of Medical Organization," respectively. ——A symposium on the thyroid gland was presented before the Main Line Branch of the Montgomery County Medical Society, Bryn Mawr, October 10, by Drs. Edward Rose, William D. Stroud, Eugene P. Pendergrass and Edward J. Klopp, Philadelphia. —— Dr. James J. Jefferson, Johnstown, among others, addressed the Cambria County Medical Society, October 13, on "Infections of the Hand and Upper Extremity."—— Mr. Alfred L. Tennyson of the Federal Narcotic Bureau, Washington, D. C., among others, addressed the Dauphin County Medical Society, Harrisburg, October 11, on "The Narcotic Law and the Physician."——Dr. William H. Schmidt, Philadelphia, addressed the Delaware County Medical Society, Chester, October 13, on "Cancer: Its Treatment by Modern Methods."

Philadelphia

Society News.—Dr. Frank Hammond Krusen addressed the Philadelphia Medical Examiners Association, October 3, on "Physical Therapy as an Aid to Routine Medical and Surgical Practice."

Hospital News.—A five story maternity building with a capacity of 100 beds was recently completed at St. Agnes' Hospital and dedicated, October 9.——Hospital property in Philadelphia was recently appraised at $43,259,000; most of this real estate is exempt from taxes.

Personal.—The Mount Sinai Hospital Association held a meeting, October 3, in memory of the late Dr. Henry B. Shmookler, medical director of the hospital for ten years and one of its founders.——Dr. Hubley R. Owen, chief police and fire surgeon, was presented with an electric clock in appreciation of his twenty-five years of service in the department of public safety, October 7.——Dr. and Mrs. Thomas S. Dunning celebrated their sixtieth wedding anniversary, October 8.—— Dr. Samuel Horton Brown has been made editor of *Weekly Roster and Medical Digest*, official organ of the Philadelphia County Medical Society.——Fifty former students of Dr. Edward B. Gleason, professor of otology at the Graduate School of Medicine of the University of Pennsylvania, gave him a dinner, October 13, in honor of his seventy-eighth birthday.

VERMONT

State Medical Election.—Dr. Lyman Allen, Burlington, was elected president of the Vermont State Medical Society, at the annual meeting, October 6. Dr. John H. Blodgett, Bellows Falls, was elected vice president and Dr. William G. Ricker, St. Johnsbury, reelected secretary.

VIRGINIA

Society News.—Dr. Arthur F. Coca, New York, addressed the Richmond Academy of Medicine, October 11, on "Recent Advances in Practical Application of Immunology," and Dr. Joseph L. Miller, Chicago, on "Pathology, Etiology and Treatment of Chronic Rheumatism."——Dr. Waverly R. Payne, Newport News, addressed the Northampton County Medical Society, Eastville, Pa., recently, on "Toxemias of Pregnancy."

Personal. — Dr. Henry Grant Preston, Harrisonburg, was elected president of the Medical Association of the Valley of Virginia at the recent annual meeting in Staunton.—— Dr. Joseph A. Noblin, East Radford, was elected president of the Southwestern Virginia Medical Society at the annual session in Wytheville, in September.——Dr. Charles L. Outland, medical inspector in the Richmond Bureau of Health for six years, has been appointed medical director of Richmond public schools, succeeding Dr. Nathaniel T. Ennett, resigned.

WISCONSIN

Graduate Course in Milwaukee.—Dr. Edwin W. Ryerson, professor of orthopedic surgery, Northwestern University School of Medicine, Chicago, was the speaker for the first session of a course on orthopedic surgery arranged by the Milwaukee County Medical Society. As in former years, the succeeding sessions will be conducted by Milwaukee specialists in the subject, who will teach small groups. Later courses will include: dermatology, roentgenology, diseases of the eye, ear, nose and throat; gynecology and obstetrics, and urology.

Society News.—Dr. Harry W. Plaggemeyer, Detroit, will address the Milwaukee Academy of Surgery, November 7, on "Present Status of Prostatic Surgery."——Drs. Hugh Cabot, Rochester, Minn., and Harold L. Morris, Detroit, were guest speakers before the Wisconsin Urological Society in Madison, September 30, on "Preoperative Drainage in Prostatic Obstruction" and "Etiological Factors in Pyelitis of Pregnancy," respectively.——At the annual meeting of the Tenth District Medical Society in Eau Claire, September 29, Dr. Frank J. Hirschboeck, Duluth, Minn., conducted a diagnostic medical clinic and Dr. Robert F. McGandy, Minneapolis, a surgical clinic. Speakers at an afternoon session were Drs. McGandy, on medicolegal angles of emergency surgery; Hirschboeck, "Diagnostic Pitfalls"; William J. Dieckmann, Chicago, "Use of Forceps" and Mr. J. G. Crownhart, executive secretary of the state medical society, "Medical Economics in Wisconsin." ——Drs. Marcell E. Gabor and Louis M. Warfield addressed the Medical Society of Milwaukee County, Milwaukee, October 14, on "Direct Signs of Duodenal Ulcers" and "Tachycardia," respectively. The society has recently moved to new headquarters in the Bankers' Building in Milwaukee.——Arthur

I. Kendall, Ph.D., Chicago, addressed the Milwaukee Academy of Medicine, October 18, on "Recent Developments in the Field of Bacteriology."——Dr. Hugh Cabot, Rochester, Minn., addressed the University of Wisconsin Medical Society, September 29, on "The Changing Practice of Medicine."——Dr. William J. Frawley, Appleton, was elected president of the Central Wisconsin Eye, Ear, Nose and Throat Society at a meeting in Eau Claire, September 26.——Dr. Francis D. Murphy, Milwaukee, addressed the La Crosse County Medical Society, La Crosse, October 18, on heart disease.

GENERAL

Western Obstetricians to Meet.—The Pacific Coast Society of Obstetrics and Gynecology, organized in 1931, will hold its second meeting in Los Angeles, December 8-10. Mornings will be spent at demonstrations at the Los Angeles General Hospital and the Los Angeles Maternity Service. Among speakers at the afternoon scientific sessions will be Drs. William B. Thompson, Los Angeles, on "Nicotine in Breast Milk"; C. Frederick Fluhmann, San Francisco, "Irregular Menstruation," and Thomas Floyd Bell, Oakland, "Occipitoposterior Position: A Review of 766 Cases." Dr. Frank W. Lynch, San Francisco, is president and Dr. Clarence A. DePuy, Oakland, secretary.

Meeting of Psychiatrists.—Dr. Hans H. F. Reese, Madison, Wis., was elected president of the Central Neuropsychiatric Association at the annual meeting in Rochester, Minn., October 6-8. Dr. Russell C. Doolittle, Des Moines, Iowa, was named vice president and Dr. Henry W. F. Woltman, Rochester, Minn., was reelected secretary-treasurer. The 1933 session will be in Cleveland. Among speakers were Drs. Reese and William F. Petersen, Chicago, "Biochemical and Psychic Correlations"; Joseph C. Michael, Minneapolis, on "Familial Epilepsy with Unusual Calcification, and Walter I. Lillie, Rochester, "Arterial Grooving of the Optic Chiasm." Dr. Franz Alexander, Chicago, was the guest speaker at the annual dinner.

Society News.—The annual meeting of the American Association of Industrial Physicians and Surgeons has been postponed to 1933, the date and the place of meeting to be decided later.——At the annual meeting of the American Society for the Control of Cancer in New York, October 8, the directors voted to make the *Bulletin* of the society its official organ and to discontinue the present relation between the society and the *American Journal of Cancer*.——Dr. John T. Murphy, Toledo, Ohio, was elected president of the American Roentgen Ray Society at the recent annual meeting in Detroit. Drs. Sherwood Moore, St. Louis, and Robert Drane, Savannah, Ga., were elected vice presidents; Eugene P. Pendergrass, Philadelphia, and Edward L. Jenkinson, Chicago, were reelected secretary and treasurer, respectively.——The biennial Congress of the French-Speaking Physicians of North America was held at Ottawa, Ont., Canada, September 6-8. Dr. Albert Paquet, Quebec, is president and Dr. Joseph U. Vaillancourt, Quebec, secretary. The next meeting will be held in Quebec in 1934. ——The American College of Physicians will hold its seventeenth annual clinical session in Montreal, Feb. 6-10, 1933.

Annual Report of Milbank Fund.—During 1931 the Milbank Memorial Fund of New York appropriated $843,337 for philanthropic projects, according to the annual report, issued October 10. Of this amount $350,000 was given to the Emergency Relief Committee of New York for immediate relief to the destitute. Among major projects of medical interest which received grants from the fund are the Committee on Costs of Medical Care, $80,000; New York State Health Commission, which finished its work last year, $4,509; New York Health Demonstrations, $149,671; committee on neighborhood health development in New York City, $15,000; New York Diphtheria Commission, which was dissolved during the year, $50,000. The fund is collaborating with the U. S. Public Health Service in a study of public health methods in two counties in Virginia and in a clinical and epidemiologic study of syphilis in Cattaraugus County, New York. A grant of $7,500 to the New York City Department of Health financed a study of BCG vaccine in tuberculosis, under the direction of Dr. William H. Park, and $25,000 was paid to the Edward L. Trudeau Foundation for research on tuberculosis. Raymond Pearl, Ph.D., Johns Hopkins University, Baltimore, is in charge of a study of population problems under a grant from the fund. Again in 1931 a contribution of $25,000 was made for the support of a rural health demonstration in Ting-Hsien, China. The fund also sponsored the publication of several books on health questions, including Sir Arthur Newsholme's survey of health procedures in Europe.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 8, 1932.

The Excessive Consumption of Carbohydrates

Dr. J. H. P. Paton of the James Mackenzie Institute of Clinical Research, St. Andrew's, has drawn attention in the *Edinburgh Medical Journal* to the evils of the excessive consumption of carbohydrates in the ordinary diet. The amount of sugar consumed per head of population in Great Britain has increased from 17 pounds in 1819 to 90 pounds in 1928. In a girls' school, Dr. Paton found that the average consumption of sugar was more than 100 pounds per head. In other countries the amounts are even greater; for Australia, New Zealand, the United States and Denmark the figure is 112 pounds per annum. Sugar differs from other foods, including carbohydrates, in that it is a pure chemical substance which has been subjected to a series of chemical processes and is totally devoid of vitamins. To a certain extent it has displaced fat in the diet of children. The pediatrician Dr. Robert Hutchinson has protested against jam replacing butter or fat. Tolerance for sugar is not unlimited. The physiologist Macleod found that when 5 Gm. of sucrose per kilogram of body weight is consumed by a healthy person, sucrose appears in the urine. Dr. Paton found sucrose in half the specimens of urine of healthy school girls. When sucrose is consumed, half of it is absorbed into the portal blood as levulose and the other half as dextrose. Thus the high consumption of sugar involves the absorption of an amount of levulose greatly in excess of that obtainable from natural foods. Even in the sugar cane, in which its amount is unusual, it forms only 10 per cent of the weight of the plant. The rise of the blood sugar following ingestion of sucrose is more rapid and higher than that following ingestion of an equal quantity of dextrose. The resting level is also more quickly regained. Dr. Paton suggests that the liver is so occupied in dealing with the levulose that it extracts less dextrose from the portal blood than if it had to deal with dextrose alone. Levulose does not appear in the blood unless the liver is diseased—that basis of one test for hepatic efficiency. The physiologist M'Clendon has shown experimentally, both in man and in animals, that excessive ingestion of dextrose raises the water content of the body. He thus induced edema of the skin in mice and general weeping eczema in a healthy man. Dr. Paton has suggested that the reduction of catarrhal illness in a boarding school during the war years was associated with the rationing of sugar. Dr. C. H. Cameron, pediatrician of Guy's Hospital, postulates for the catarrhal child a high water content. "The water depots of the body, the subcutaneous adipose tissues, are, as it were, overfilled. With an increase of the lymph content of the body, the lymphoid tissue in all situations tends to show a varying degree of hyperplasia." M'Clendon's observations suggest that this would result from overingestion of carbohydrates, and Cameron recommends their restriction. Maitland Ramsay, the ophthalmologist, found that this restriction, including complete withdrawal of sugar, had a beneficial effect on phlyctenular conjunctivitis—a condition associated with the catarrhal diathesis.

Passing to carbohydrates in general, Orr of the Rowett Research Institute, Aberdeen, observed that the death rate from bronchitis and pneumonia in a cereal-eating East African tribe was ten times as high as in a similar carnivorous one. Dr. Paton found in a girls' school that the catarrhal rate in a house with the lowest sugar consumption (1⅛ pounds a week) was 5.5 per cent, while that in the house with the highest consumption (2⅛ pounds a week) was 24.6 per cent. He also suggests that the pancreas may be affected by exces-

sive consumption of carbohydrates. Seale Harris has shown that the secretion of insulin is disturbed and that hyperinsulinism with hypoglycemia is followed by exhaustion of the islands of Langerhans. He thought that diabetes might be so produced by the overeating of carbohydrates. Other effects are rickets and dental caries, as emphasized by Mellanby. The natives of the island of Tristan da Cunha, from whose diet cereals are almost excluded, are free from these diseases. The graphs of sugar consumption and of the cancer death rate since 1850 run nearly parallel.

Compensation for Workmen's Eye Injuries

The Council of British Ophthalmologists has made an important report on the compensation of workmen for eye injuries. They are of opinion that the workmen's compensation act should be amended so as to secure to the injured workman, in addition to the benefits at present allowed in respect of earning power, a lump sum payment to compensate for permanent loss of function or disfigurement. This principle is already embodied in certain schemes operated by private firms in this country, and a lump sum payment for partial or total loss of vision and other ocular disabilities was recognized in the regulations for the granting of war pensions. It is held that if workmen's compensation included not only part payment of wages during disability but also payment of a lump sum in respect of loss of an eye, a proportion of central vision or part of the field of vision, there would be less delay in the settlement of claims, less subsequent demoralization, with deterioration of eyesight and of health, and less litigation.

Financing Hospitals by Sweepstakes

The immense success with which the Irish hospitals have become parasitic on the gambling spirit of the world is producing ulterior effects. The last sweepstake but one reached the enormous total of $20,000,000, of which $14,000,000 was distributed in prizes and $1,500,000 paid in expenses. Instead of paying the remaining $4,500,000 to the hospitals, the Free State government now takes half of it—one fourth as "stamp duty" and another for public health purposes. A large part of the money comes from Great Britain, and the feeling has naturally arisen that, if the British people will gamble in this way, their own hospitals should reap the benefit. In the six sweepstakes that have been conducted, Great Britain subscribed $66,000,000, of which $35,000,000 was returned in prizes. Such gambling is illegal in Great Britain and some prosecutions have taken place for selling tickets; but it has proved impossible to check their sale. It is now proposed to get over the obstacle of illegality in Great Britain by forming a syndicate in Monte Carlo by means of which British citizens can gamble on sweepstakes to the benefit of their own hospitals. A start is to be made early in 1933 by sweepstakes on an English horse race. There is some question as to how much the government of Monaco will share in the profits; half has been mentioned, but it is thought that this fraction may be considerably reduced.

White Walking Sticks for the Blind

The automobile, which has brought so much danger to the pedestrian, is especially dangerous to the blind. The ingenious idea that the blind should carry white walking sticks, as a sign of their infirmity, is being put into practice. Institutions for the blind are now supplying these sticks, which will become a recognized warning to automobile drivers.

The Village Settlement System for Tuberculosis

The success of the Papworth Village Settlement for Tuberculosis, founded near Cambridge by Sir P. Varrier-Jones, has been so great that it is now being copied by foreign countries. Patients with pulmonary tuberculosis settle in the village with their families and carry on industries which are nearly self-supporting. Not only are the results excellent as regards the treatment of the patients, but under the regulated life pursued there has been found to be no danger of communicating the disease to other members of the family. At the recent International Conference on Tuberculosis, held at Amsterdam, Dr. Vos, of the Hellendoorn Sanatorium, Holland, described Sir P. Varrier-Jones as a great pioneer whose example had been an incentive to all. Dr. L. Guinard of Bligny, France, announced that a village on the Papworth lines would be opened at Salagnac, in the Dordogne. Professor Morelli, Italy, is about to visit Papworth with a view to the adoption of the system in Italy. In a paper read for Sir P. Varrier-Jones, who was not able to attend the congress, he said: "Imagine the danger to the community when a person thought to be noninfective suddenly becomes highly infective and dangerous to all in his immediate vicinity. For such cases the village settlement is essential." Papworth has succeeded because the plan has turned to account the business acumen, the industry and the skill of the patients. They have solved their own economic problem, and tuberculous persons in other countries can do the same.

William Sterling

William Sterling, known all over the English-speaking world for his part in the production of "Landois and Sterling's Physiology," has died at his home in Manchester. Born in 1851, he was educated at the University of Edinburgh, from which he graduated with first-class honors in 1870. He then worked abroad at physiology and histology under distinguished teachers—at Leipzig under Ludwig, Kronecker and Fleschig, and at Paris under Ranvier, the histologic neurologist. At the age of 26 he was appointed professor of the "Institutes of Medicine" at Marischal College, Aberdeen, where he remained until he became professor of physiology at Owens College, Manchester. He was a successful teacher and author. His "Outlines of Practical Physiology" appeared in 1888 and "Outlines of Practical Histology" in 1890, an American edition appearing in 1902. But it was his translation of Landois's Physiology that made him widely known. His emendations and additions to this great work were so extensive that he was rightly regarded as a co-author rather than a translator of the book.

PARIS

(From Our Regular Correspondent)

Sept. 28, 1932.

Congress of Alienists and Neurologists

The thirty-sixth Congrès des médecins aliénistes et neurologues de France was held recently at Limoges on the same date as the dedication of the bust erected to Gilbert Ballet in that city, near which he was born in 1853 and where he carried on his first studies. The congress, which was held under the chairmanship of Professor Euzière of Montpellier, was well attended and attracted several foreign delegates. Papers were presented by Dr. Achille Delmas, dealing with the rôle and the importance of the constitution in psychopathology, and by Dr. Moreau of Liége, on encephalitis and other diffuse disorders of the brain. Dr. Lauzier read a paper that dealt with the changes to be made in the law for the protection of the property of psychopathic patients and gave rise to a discussion in which widely divergent opinions were expressed. Numerous private communications were then presented. The dedication of the bust of Gilbert Ballet furnished the occasion for several brilliant speeches. The next meeting will be held at Rabat, Morocco, under the chairmanship of Professor Guillain. Three topics have been placed on the program: psychotic encephalitis, to be presented by Dr. Marchand; ataxia, to be offered by Dr. Garcin, and medical consequences of traumatic amnesias, to be considered by an essayist who remains to be chosen. Dr. Porot of Algiers announced that a large psychopathic hospital comprising 750 rooms is in process of erection at Blida,

Algeria, as the metropolis has refused to assume any longer the care of the insane from Algeria.

Two Conventions in Nancy

The Société orthopédique de France, which holds a meeting every two years in some city in the provinces, this year chose Nancy, out of consideration for Professor Frölich, its president, who was also one of its founders and who has just completed, in that city, the construction of an orthopedic center with the most complete modern equipment. In his opening address, Professor Frölich gave a survey of the new orthopedic methods and of their results; more particularly, arthrodesis in progressive and painful scolioses, trochanteroplasty in old congenital luxations of the hip, tarsectomy in congenital clubfoot, and osteotomy for the correction of spinal deviations. Communications and demonstrations were then presented by Drs. Binet and Roque, Corret, Mutel and Rousseaux, Hoche, Grandgerard, Guillemin, Hamant, Bodart, Cuénot and Chalmot, Allenbach, Marcel Meyer and Dieterich. A large number of specialists came from various cities of France to take part in the congress. The closing banquet was presided over by Professor Ombrédanne of Paris.

The following day, the annual regional medical convention was held in Nancy, coincident with the opening of the new library of the Faculté de médecine, which is superbly equipped. Lectures on live pathologic topics were delivered, as is the custom, by the practitioners of the region, Dr. Meignant speaking on the detection of mental backwardness in the child; Dr. Aubry on malariotherapy in the treatment of dementia paralytica; Dr. Michon on the current methods of treating epilepsy; Dr. Mathieu on the practical value of electrocardiography, and Dr. Hamant on finger injuries and their complications.

Research on Lymphogranulomatosis

The Nicolas-Favre disease continues to be the subject of much research. Bensaude has shown that this disease is the hidden cause of most cases of nontraumatic anorectal stenosis. Levaditi inoculated into a monkey the virus of lymphogranulomatosis, producing a general infection with localizations in the cerebrospinal axis. The brain of the infected monkey furnished the laboratory an inoculation material that was more suitable than the pus of inguinal buboes. The intravenous injection of the virus induces fever in a subject affected with the disease and no such reaction in the healthy subject. The reaction decreases as the injections are repeated until finally there is no reaction. This is an important point in the diagnosis and treatment. It always agrees with the information supplied by the Frei test when there is a question of diagnosis between chancroidal buboes and anorectal strictures. On the contrary, the antigen of simian origin, when introduced by the subcutaneous route, causes no reaction in subjects affected with genuine lymphogranulomatosis. However, the intravenous injection, if repeated a sufficient number of times, exerts a favorable action on the evolution of the disease, which is quickly cured if the case is recent; the resistance is greater in cases of long standing. One need not fear about increasing the dose and repeating the injection while endeavoring to induce each time a febrile reaction. The normal dose is from 0.5 to 1.5 cc. of an emulsion of monkey brain in physiologic solution of sodium chloride. Certain other researches point to possible relations between the Nicolas-Favre disease and syphilis. At least, it may be suspected that certain lesions attributed to syphilis in the tertiary period, without visible spirochetes (for example, the lesions that Fournier terms anorectal syphiloma and that are resistant to specific treatment), are of syphilitic origin. But a communication that has been presented to the Academy of Sciences by Jonesco-Miharisti, Tupa, Wiener and Badenski contains still more troublesome observations. By inoculating into the monkey a filtrate of the virus of lymphogranulomatosis, they induced in that animal a tabetic syndrome with the destruction of Goll's tract. They expressed the opinion that lymphogranulomatosis might no doubt be the cause of certain cases of tabes in which the existence of previous syphilis is not revealed.

Insufficient Amount of Snake Bite Serum

The anti-snake bite serum, prepared at the Institut Pasteur de Paris, in accordance with the research of Professor Calmette, is demanded in such quantities that the laboratories are unable to produce a sufficient amount, in view of the fact that the colonies, to which it is sent in the form of a dry vaccine, have to be supplied. The minister of public health has published a notice asking the public to be patient if all demands for serum are not met promptly and urging that the serum be reserved primarily for human beings bitten by reptiles. The enormous increase in the consumption of this serum is due to the fact that hunters use it extensively in treating their dogs.

BERLIN

(From Our Regular Correspondent)

Sept. 19, 1932.

Epidemic Cerebrospinal Meningitis in Germany

A report published by Dr. Linder in the *Reichsgesundheitsblatt* shows that epidemic cerebrospinal meningitis occurs only sporadically in Germany and in many other countries. In England and in the United States an increase in the morbidity was observed in 1931, the number of cases in the United States increasing to 5,293, as compared with 1,916 in 1926. In 1932 the disease took on epidemic proportions in Egypt and in some Chinese ports. The case mortality rate in Germany ranges between 40 and 60 per cent; when higher rates are reported, it is doubtless due to inadequate notification of cases. In the northern hemisphere the disease is most prevalent during the first two quarters. It is essentially a children's disease; in Germany more than half of the cases occur in children, and the mortality of the infants, which ranges between 80 and 90 per cent, is the highest. The incidence of the disease is higher in males. Aside from the causative agent, everything points to an individual predisposition to the disease. That explains why so often no connections between the various cases can be shown. The adjoined table shows the number of cases that occurred each year in Germany from 1921 to 1931, together with the number of deaths reported.

Year	Number of Cases	Deaths	Year	Number of Cases	Deaths
1921.....	696	432	1927.....	830	474
1922.....	1,622	793	1928.....	823	451
1923.....	1,194	640	1929.....	959	523
1924.....	742	458	1930.....	663	354
1925.....	758	448	1931.....	581	257
1926.....	730	417			

Austria has now introduced compulsory notification of cases of encephalitis following infections and vaccination against smallpox. This occurred without the passage of any special legislation, being justified by the statement that in both of these disorders there is a possibility of the existence of epidemic encephalitis, which has been notifiable since 1927, and that even a suspicion of the presence of the disease requires notification.

Effects of Economic Crisis on Children

The Deutsche Gesellschaft für Kinderheilkunde, at its meeting in Dresden in September, 1931, expressed in a proclamation the fear that the long continued economic crisis might cause a general weakening of resistance to disease in the oncoming generation. Observations made during the war show that children suffer the most from inadequate nutrition. For that reason, Gottlieb and Stransky of the Vienna public health service examined 800 young children, establishing the weight of each child. They report in an article in the *Klinische Wochenschrift* that the number of underweight children in

families that had been at least a year without a definite source of income was considerably higher than the number of children showing overweight. Among the children of employed parents, however, the number showing overweight was more than twice as large as the number presenting underweight. The children of the unemployed, ranging between 2 and 4 years of age, show an especially large number who are underweight. In children 5 and 6 years old, the differences are not so marked. The results of these investigations appear to justify the fears of the Deutsche Gesellschaft für Kinderheilkunde. While the conditions among school children are at present more favorable, there can be no doubt that, if the economic crisis continues, they also will soon present symptoms due to inadequate nutrition, as is apparent from investigations made in some of the industrial sections of Lower Austria.

Treatment of Gastric Ulcer

Prof. Karl Glässner of Vienna gives in *Forschungen und Fortschritte* his results of research on gastric ulcer. He has contributed some facts in regard to the recognition and the treatment of this disease. He found in a large number of patients with gastric ulcer characteristic changes in the tongue, which are not usually observed, in the form of slight defects in the posterior portion of the lingual mucosa. They may be caused by nutritional disturbances that have their basis in blood changes of a chemical nature, or they may be produced by erosions of the mucosa caused by acids rising from the stomach. These defects constitute a valuable sign pointing to the presence of gastric ulcers. Advances in the treatment are also suggested. In animal experimentation Glässner had found that ulcers on the skin and mucosae can be produced by pepsin with hydrochloric acid, and that these ulcers heal spontaneously within a definite time. This time can be materially shortened by injections of neutral pepsin. By transferring this treatment to man, he succeeded in relieving the symptoms of ulcer patients within a few weeks, without the necessity of requiring a strict diet. Such a course of treatment requires four weeks. He succeeded by the use of this method in saving a large percentage of his patients from an operation. As yet only a preliminary report on this treatment has been published, so that naturally further verification will be needed.

Effects of Abolishing Free Medicines

In previous letters, reference has been made to the effects of the economic depression in Germany on social insurance, and on supplying the population with physician, medicines and hospital care. From time to time, new aspects of the situation are presented. At a recent meeting of the Deutscher Apotheker-Verein, held in celebration of the sixtieth anniversary of the creation of the organization of the pharmacists, the following resolution, which has an important bearing on public health, was adopted:

> The requirement that obliges persons insured in the sick benefit associations to contribute 50 pfennigs (12 cents) toward every prescription is no longer endurable. Owing to the general reduction in prices, the portion paid by the insured is no longer in proper relation to the actual cost of the prescription and threatens to thwart the original purpose of health insurance. The share in the cost of prescriptions that has to be borne by the patient's family is making it increasingly difficult to have prescriptions filled and is endangering public health.

In spite of the endeavors and many well grounded representations of the association of pharmacists against the unlawful trade in medicines outside of the pharmacies, no energetic measures have been taken by the government to check the abuse. A plan was therefore adopted according to which urgent representations are to be made to the government authorities in an endeavor to induce them to stop the illegal traffic, which is an increasing menace to the very existence of the pharmacies.

Medical Supervision of Voluntary Workers

The daily press has pointed out that endeavors have been made to combat unemployment among juveniles by providing opportunities to perform work that promotes the common welfare. A federal commissioner has been appointed to exercise general supervision over such voluntary work service. He has directed the attention of the chief provincial medical authorities to the necessity of adopting welfare measures to preserve the health of such voluntary workers. Suitable measures must be promptly taken to guard against the dangers that may arise from the gathering of many young persons in work camps. The acting Prussian minister of public welfare, who now performs the duties of the minister, has handed on the suggestion to his superiors and has ordered that the district physicians shall inspect proposed work camps and see that the hygienic conditions are satisfactory.

Deaths from Drowning

According to a report of the department of physical education connected with the Prussian ministry of public welfare, the statistics on the fatalities resulting from drowning in 1930 are now available. For the whole *reich*, 3,499 such accidents are reported, 2,185 in Prussia (1,866 males, 319 females), which amounts to 5.5 drownings per 10,000 inhabitants.

ITALY

(From Our Regular Correspondent)

Aug. 30, 1932.

Congress on Bread Making

The International Congress on Bread Making, held at Rome, was attended by representatives from nearly every country of the world. Among the biologists who participated in the work of the scientific section of the congress were Professors Machebeuf, of the Institut Pasteur de Paris; Bertarelli of Pavia, and Baglioni and Visco of Rome.

Great interest was awakened by the discussion on the subject of "Artificial Bleaching of Flour." Professor Bertarelli was favorable to bleaching by means of nitrogen oxide. Professor Baglioni pointed out that bleaching is demanded chiefly as a matter of appearance and custom, since the biologic value of bread made with chemically bleached flour is probably less than of that made with natural, unbleached flour, which preserves, in contrast with the bleached flour, the carotene and the carotenoids.

Professor Machebeuf exhibited a type of bread that can be kept fresh, in a tin box, for a year and still retain the value of fresh bread.

Professor Baglioni presented a paper on the food value of wheat gluten. Recent research on this subject shows that the proteins of gluten can replace, gram for gram, the cellular proteins not only in adult organisms but also in organisms in process of development. It suffices to add small amounts of egg albumin to the pure gluten in order to assure exuberant development in the experimental animals during the period of growth. These results have been confirmed by research carried out on man. The discussion that followed was participated in by Professor Brugere, instructor in chemistry in Paris, and by Chevallier.

A resolution was passed to the effect that dietetic products intended for diabetic patients should state on the container the amount of carbohydrate and protein substances they contain.

Among the products on exhibit, the breads with an added amount of protein were an innovation The Italian type, agreeable to the taste, contained 5 per cent of carbohydrates and had a low specific gravity. This bread enables the physician to distribute better in the diet of a diabetic patient the amount of carbohydrates tolerated and permits the use of other foods that are pleasing to the patient and have a relatively high carbohydrate content.

The Turin Academy of Medicine

At the meeting of the Turin Academy of Medicine, Cionini spoke on the treatment of Addison's disease with cortical hormones. Of three cases treated in this manner, death

occurred in two, after a temporary improvement. The treatment was not begun, however, until the patients were already in a very grave condition. In the third case, the results were fairly satisfactory, especially as regards the subjective improvement, which was prompt. On the whole, the speaker considers the cortical hormone a very effective remedy.

Dominici and Marengo discussed the value of van den Bergh's test for the diagnosis of various forms of icterus. The direct, prompt reaction is characteristic of mechanical icterus; the direct, retarded reaction is indicative of so-called hepatocellular icterus; the direct, diphasic reaction appears to represent the effect of the simultaneous association of pathogenic factors. The indirect, prompt reaction is exclusively characteristic of the normal blood serum and of the hemolytic types, in which other reactions are never observed. The indirect, retarded reaction is rather rare, and so far the speakers have encountered it only in a particular type of familial hemolytic icterus and in the blood serum of the new-born.

Segre spoke on phonetic treatment in paralysis of the recurrent nerve. The methods are based on respiratory education and enable the practitioner to improve the vocal articulation. The patient is required to produce successively all the tones of the vocal register, being asked at times to dwell on low or falsetto tones, with the result that, after the voice is stabilized, it is not difficult to produce the normal tones. The patient is then made to produce vocal sounds with clipped vowels and afterward in full syllable, a finger being pressed against the lobe of the thyroid on the sound side, while flexion exercises of the head are carried out and weak galvanic currents and harmonious vibrations are applied to the neck.

Clinical Biometry

Prof. Nicola Pende, of the University of Genoa, explained, at a meeting of the Academy of Medicine of Genoa, the new research on biotypology. Every European regional population is made up of several fundamental races of man, which differ in morphologic and biochemical characters. If one wishes to evaluate biometrically an individual of a regional population and classify him as belonging to a normal type, the prototype cannot rationally be determined by taking the arithmetical mean discovered by considering a certain number of individuals selected from the population of the region in question. The normal-type individual of a given region may be the product of one or more races but not necessarily of all the races that inhabit the region in which he happens to be living. For example, the region about Venice is inhabited by a mixture of several races (Dinaric, or Adriatic; Sub-Adriatic [Deniker], Alpine, Mediterranean [Sergi] and Nordic). The speaker pointed out that the average Venetian type, as defined by present methods, is a man of high stature and, for the most part, brachycephalic. This type cannot be taken as the prototype, for example, of an individual of typical Mediterranean race, which is characteristically of medium stature, dolichocephalic and of dark complexion. What is needed is not the fixation of the average regional type but the establishment of as many average regional ethnical types as there have been principal races (generally four or five) that have lived for centuries in a given region and are still recognizable by their somatic and psychic characters. Professor Pende is at present carrying on such a research in the Istituto biotipologico ortogenetico in Genoa, of which he is the director.

Galactophoritis

At a meeting of the medical society of Pistoia, Magni and Romagnoli spoke on puerperal galactophoritis. Magni referred to the great frequency of this disorder during the period of lactogenic activity of the mammary glands and cited the principal causes. He discussed the damage that it causes the mother and the nursing child. Besides being often the point of origin of mastitis, galactophoritis is one of the causes of early hypogalactia and agalactia, which are encountered in lactating women.

Galactophoritis may be also the beginning of diseases of the female breast that arise after the climacteric. A milk that is contaminated by an infection of the glandular elements or the secretory ducts of the mamma subjects the child to diseases caused by the pathogenic organisms present and doubtless produces in the child the greater part of the dystrophic diseases. Many cases of rickets, anemia and spasmophilia observed in breast-fed children are to be regarded as the effects of subacute or chronic galactophoritis that was not recognized or that was neglected from the therapeutic point of view. The speaker said that by careful treatment of the diseased breast the foregoing disorders in children can be prevented. The practitioner, particularly the pediatrician, should therefore make a careful examination of every lactating breast in order to make an early diagnosis of galactophoritis.

Romagnoli, author of a work on the radiology of the normal female breast, announced on this occasion the results of research on the pathologic mamma. He compared roentgenograms derived from normal periods of gestation, puerperium and lactation with roentgenograms of mammae affected with galactophoritis. He has experimented with a preparation that permits the roentgenologic visualization of the milk ducts and presented some roentgenograms secured with the aid of endovenous injection of opaque substances. He has not as yet obtained any notable results.

The Superior Council on Health

Under the chairmanship of Professor Marchiafava, senator, the superior council on health met recently at the ministry of the interior. Basile, director general of the public health service, described the present hygienic and sanitary conditions in Italy and the measures that have been adopted for the protection of public health. He discussed the organization of antimalarial services in reclaimed regions, the method for the collection of serums designed for therapeutic purposes, the technic for the performing of blood transfusions, and the extension of the compulsory notification of ancylostomiasis, particularly in the rural and agricultural areas. Professors De Blasi, Morelli and Manfredi discussed the regulations pertaining to the hygiene of the soil and of dwellings, and gave his criteria for the construction of antituberculous dispensaries. The council considered also postgraduate instruction in hygiene, particularly as designed for persons desiring to enter the public health service.

Commission for the Study of Goiter and Cretinism

A commission, of which Professor De Sanctis of the University of Rome is president, has been appointed to study problems pertaining to areas in which goiter and cretinism are endemic. The commission is to determine what regions of Italy are so affected, to give to physicians exact diagnostic criteria, and to ascertain what provisions should be taken in the infected regions. At its first meeting, the commission decided on the mode of inquiry and proposed to extend to the population of certain valleys general prophylaxis with iodized salt.

Lectures by Professors Labbé and Forgue

At the invitation of the Accademia medica (Genoa), Professors Labbé (Sorbonne) and Forgue (Montpellier) delivered addresses recently in Genoa. Professor Labbé dealt with the diagnosis of glycosuria, which he divided into three categories: true diabetes, paradiabetic states, and renal diabetes. In true diabetes, the fundamental disturbance is the insufficiency of the islands of Langerhans, and the remedy of choice is insulin. Paradiabetic states are frequent in association with obesity, liver disorders, pregnancy and lesions of the nervous system. There may be simple glycosuria or glycosuria associated with insulo-

pancreatic insufficiency, with glycoregulatory disturbance. Renal diabetes is not true diabetes and never develops into true diabetes.

Professor Forgue discussed the subject of "Pain." He distinguished between painless surgery and surgery of pain. As illustrative of the surgery of pain, he cited trigeminal neuralgia, periarterial sympathectomy and other operations on the sympathetic nerve designed to relieve pain.

VIENNA

(From Our Regular Correspondent)

Sept. 1, 1932.

Suicide in Vienna

The Vienna "Statistisches Jahrbuch" for the year 1931, which is published by the federal bureau of social medicine, places the number of attempted suicides during 1931 at 3,204, of which 1,068 were successful. This constitutes an increase of 13 per cent over the record for 1930. There were 629 men and 439 women among the suicides. There were ten children under 14 years of age who attempted suicide, and four of them succeeded. There were 103 juveniles between the ages 14 and 18 who attempted suicide, and thirty-two were successful. During the period from 1913 to 1931, an increase of 44 per cent in the number of suicides was noted. Since the number of normal deaths has greatly decreased and also the population of the country has diminished, this constitutes a marked increase. To cite more detailed figures, 1.5 per cent of the total number of deaths in 1913 were due to suicides, and 2.9 per cent in 1931. There were twenty-eight suicides per hundred thousand of population in 1913, and the number had increased to forty-one in 1931. Among the motives, economic distress shows the highest figure (32 per cent), disease comes next (21 per cent), and disappointment in love affairs is third (14 per cent). It should be noted that among the attempted suicides the women exceeded the men by 200; among the successful suicides there were 190 fewer women. In 50 per cent of all attempted suicides, poisoning (usually with gas) was the method employed.

Statistics are given also on prostitution. During the year 1931 the police arrested 3,750 women on the charge of prostitution, 383 of whom were under 18 years of age; 105 of these juveniles were infected. Of the older culprits, more than 30 per cent were manifestly ill and had to be sent to the hospital. Among this number there were thirty-two women over 50 years of age, all of whom without exception had been treated, some time in the past, for syphilis and gonorrhea. In twenty-eight cases, metasyphilitic symptoms were at once obvious in the arrested women.

The Use of Grenz Rays (Bucky Rays)

An interesting lecture on Bucky rays, the use of which is not yet generally known, was recently delivered by Professor Dr. Kumer before the Wissenschaftliche Aerztegesellschaft of Innsbruck (Tyrol). Bucky rays, which are also called grenz rays, are nothing more than long wave, or very soft, roentgen rays. They are produced in every roentgen tube but are entirely absorbed by the glass of the tube. In order to make them available for use, a thin glass window must be built into the roentgen tube. Theoretically, very soft roentgen rays are supposed to be much more dangerous than the hard rays, but in practice the Bucky rays have been found to be harmless. Even a dosage equal to 1,000 erythema doses produces no ulceration if it is applied within a short space of time. These rays are used chiefly for superficial disease processes, especially those of a dermatologic nature. They are used with success also in ophthalmology. In internal medicine, however, their action has not thus far been found to be especially perceptible, the same being true of gynecologic practice. On the other hand, Kumer and Krainz (both of Innsbruck) have applied irradiation to the mouth and the pharynx with good success and they recommend this method as an excellent means of combating the so frequent and so resistant pharyngitis sicca. Previous research on this disorder has not clarified the etiology, though possibly hormonal disturbances may be assumed. Krainz employed the Bucky rays in ten especially refractory cases, applying doses of from 300 to 400 roentgens to the posterior wall of the pharynx through a hard rubber tube. After an interval of three weeks the irradiation was repeated, from three to four such applications having been given. The results were in all cases satisfactory, and in four cases the outcome was exceptionally good; but the good effects are nearly always confined to the irradiated surface, where the mucosa became smooth, moist and of normal appearance. The subjective symptoms usually disappear after the second treatment, but in some cases only after the lapse of several weeks after the last treatment. The oldest case has been observed for two years, and the most recent case for six months. Excised tissue taken from the pharyngeal mucosa before and after treatment showed that the original chronic inflammatory conditions in the epithelium retrogressed after the applications of the grenz rays. While this new treatment possibly will not in all cases yield the same good results, the method must be regarded as an improvement over the previous methods applied to pharyngitis sicca.

Convention on Rheumatism

The medical society of Upper Austria organized recently a meeting for the discussion of the problem of rheumatism. Professor Ritter discussed the pathogenesis of rheumatism. The name is in reality a subjective expression, in which pain stands in the forefront. The manifestations are clearly demonstrable in iritis, pleuritis and arthritis rheumatica, whereas in neuritis the symptoms are subjective. Aschhoff's nodules are found in the region of the tonsils, in the joints, in the muscles and in the nerves. All attempts to discover micro-organisms have thus far proved futile. Acute articular rheumatism is a diffuse disorder of the mesenchyma, with distinct Aschhoff's nodules in various stages of development. The rheumatic tissue changes are observed also in the blood vessels. Suppuration never occurs in articular rheumatism. Many patients with acute articular rheumatism show some connection with tuberculosis. Probably tuberculosis produces the allergy that prepares the patient for the rheumatism. The spleen and the lymph glands are often swollen. The salicylates are not a specific but they are a valuable symptomatic remedy.

Prof. Dr. Kowarschik spoke on the treatment of rheumatism. He called attention to the fact that it is necessary to consider constitution and nutrition. Acute rheumatism should be treated by medicaments and not too early by physical means. Also in chronic rheumatism, medicaments (the salicylates and other antirheumatic remedies) are often necessary. Intravenous and percutaneous applications are not so valueless as often represented. They act antipyretically and combat muscular atrophy. Irritation therapy is useful, but one must avoid such large doses as will cause decomposition of the proteins in the body. Physical therapy acts in a similar manner to irritation therapy. The dosages of thermal, electrical, mechanical and light irritants, as represented by the whole arsenal of electric rays, hot air, steam and mud baths, must be carefully determined. Increases of temperature are a contraindication to other than mild irritation therapy. Sulphur and radium baths constitute a combination of chemical and physical action. The forms of treatment employed in health resorts and bathing establishments are likewise types of combined irritation therapy. Diathermy and short wave irradiations may not be used in acute conditions. Faradization and mechanotherapy are early indications in atrophy of the muscles or contractures of the joints.

Blocking of Peripheral Arteries by Emboli

Addressing recently the Gesellschaft der Aerzte in Vienna, Dr. Snapper, a surgeon of the Netherlands, delivered an

address on the blocking of the larger arterial trunks. The cause of such blocking is nearly always an embolus, which is often caused by septic endocarditis, but more frequently by auricular fibrillation. In the latter case, thrombi develop in the distended auricle, which are then carried to other parts. Thrombi may likewise be carried from an aortic aneurysm. Twenty-two cases of complete blocking of the aortic bifurcation by emboli, without development of gangrene of the limbs, have been reported in the literature. Dr. Snapper emphasized that often no gangrene develops in association with such occlusions of large arteries, and he cited a number of cases in the literature in which emboli of the aorta, the aortic bifurcation, or of arteries of the extremities, developed without being followed by gangrene. He reported also the case of the French surgeon who, in connection with the exarticulation of a hip joint, ligated at the start the aorta by mistake, instead of the arteria iliaca communis, without the sound leg becoming gangrenous. The clinical picture of embolism of the aorta, and particularly of the bifurcation of the aorta, may take on various forms. Even with total closure of the bifurcation, sometimes only one extremity will show symptoms. Symptoms may develop, such as paraplegia, that one may be inclined to refer to myelitis. The leading symptom is, however, the absent pulsation, especially in the femoral artery. Professor Snapper emphasized again that in the presence of such obstructions one should remain conservative as long as possible. He cited a number of cases from the literature, in which, in spite of absolute obstruction, the strange observation was made that in some manner anastomoses of the capillaries developed, while gangrene of the organs concerned did not occur, though considered inevitable, and the amputations were in part unnecessary and in part necessary only in a restricted sense. In necropsies carried out after embolisms it was frequently found that, in spite of complete obstruction of both arteriae iliacae communes, only one extremity was involved, and that, so to speak, spontaneous recovery occurred. In thrombo-angiitis obliterans (endarteritis obliterans) the treatment is rather uncertain if the case is difficult. One may use vasodilators (alcohol by mouth); likewise in cases of Raynaud's gangrene and sclerodermia; but the number of failures is much greater than the successes.

During the discussion that followed the presentation of the paper, it was confirmed by competent surgeons, physiologists and internists that many patients who appeared doomed because they refused an amputation survived in spite of the embolism. Especially the upper extremities appear to offer a good prognosis. Most speakers admitted that embolism therapy is still unclarified, in spite of embolectomy, which, having been proposed by Key (of Sweden), is now frequently performed.

Marriages

ADOLPH M. HUTTER, Madison, Wis., to Miss Helen Janet Kay of Kansas City, Mo., September 22.

WALTER LINDEN WILHELM, Memphis, Tenn., to Miss Ruby Cottrell of Boone, N. C., September 21.

NATHAN FRANCIS, Rochester, N. Y., to Miss Beverly Salsburg of Wilkes-Barre, Pa., September 1.

JOSEPH A. THOMAS to Miss Evelyn I. Brady, both of Valdosta, Ga., September 5.

MARIE B. KAST, Indianapolis, to Mr. H. Theodore Kuhlman of Philadelphia, October 15.

RAGNAR T. WESTMAN to Miss Gladys Emilie Magiera, both of Minneapolis, October 4.

LAWRENCE J. HAPPE to Miss Marguerite Sanger, both of Marshall, Minn., recently.

RUSSELL J. MOE to Miss Virginia Mary Palmer, both of Duluth, Minn., recently.

FRED J. STUCKER to Miss Pauline Ford, both of Chicago, September 14.

Deaths

Lewis Fisher ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1906; associate professor of neuro-otology, Graduate School of Medicine of the University of Pennsylvania; special lecturer on neuro-otology, Woman's Medical College of Pennsylvania; member of the American Laryngological, Rhinological and Otological Society and the American Otological Society; aged 46; on the staff and assistant to the dispensary, Jewish Hospital; on the staff of the Mount Sinai Hospital, where he died, October 14, of injuries received in an automobile accident.

Burton Baker Grover ⊕ Colorado Springs, Colo.; Long Island College Hospital, Brooklyn, 1879; past president of the El Paso County Medical Society, American Physical Therapy Association and the American Congress of Physical Therapy; health officer of Colorado Springs, 1894-1899; formerly on the staff of St. Francis Hospital; associate editor of the *American Journal of Physical Therapy* and the *Medical Herald;* author of "Handbook of Electro-Therapy," "High Frequency Practice" and "Epitome on Blood Pressure"; aged 74; died, July 23, of heart disease.

Peter A. Callan, Yonkers, N. Y.; Medical Department of the University of the City of New York, 1867; fellow of the American College of Surgeons; past president of the American Ophthalmological Society; assistant surgeon, U. S. Navy, 1869-1872; ophthalmologist to the Columbus Hospital and St. Vincent's Hospital, and consulting surgeon to the New York Eye and Ear Infirmary, New York; president of the medical board of St. Joseph's Hospital; aged 87; died, October 4, in the Manhattan Hospital, New York.

Paul Shillock ⊕ Lieutenant Colonel, U. S. Army, retired, Minneapolis; St. Paul Medical College, 1886; College of Physicians and Surgeons in the City of New York, 1887; entered the Army as an assistant surgeon in 1888; veteran of the Spanish-American War; was promoted through the various ranks to that of major in 1901; retired with rank of lieutenant colonel in 1910 for disability in line of duty; aged 68; died, September 30, in the Eitel Hospital, of prostatic hypertrophy and chronic nephritis.

William Edward Faulkner ⊕ Keene, N. H.; Harvard University Medical School, Boston, 1891; member of the Massachusetts Medical Society and the New England Surgical Society; fellow of the American College of Surgeons; served during the World War; consulting surgeon to the Elliot Community Hospital; aged 68; died, September 16.

Harry T. Smith, Humeston, Iowa; Keokuk (Iowa) Medical College, 1897; member of the Iowa State Medical Society; for many years health officer of Humeston and member of the board of education; aged 62; died, August 23, in the Harken Hospital, Osceola, of chronic myocarditis and prostatic obstruction.

Heliodor Schiller ⊕ Chicago; German University of Prague Faculty of Medicine, 1896; fellow of the American College of Surgeons; associate surgeon to the Michael Reese Hospital; aged 61; died, October 20, in St. Therese's Hospital, Waukegan, Ill., of injuries received in an automobile accident.

Henry Armstrong, Sharon, Pa.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1890; member of the Medical Society of the State of Pennsylvania; aged 70; died, August 10, in the Christian H. Buhl Hospital, of cerebral hemorrhage.

Henry Edward Shannon ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1926; aged 33; on the staffs of the Kings County Hospital, Long Island College Hospital, St. Anthony's Hospital and the Caledonian Hospital, where he died, September 3, of acute appendicitis.

Loran Lee Gold, Oakboro, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1929; member of the Medical Society of North Carolina; aged 27; died, September 29, in the Presbyterian Hospital, Charlotte, of a pituitary tumor and cerebral hemorrhage.

Edwin Wright, Sardis, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1886; member of the Mississippi State Medical Association; town health officer and president of the local school board; formerly bank president; aged 69; died, September 27.

Herbert Homer Smith ⊕ Major, M. C., U. S. Army, Fort Leavenworth, Kan.; Bellevue Hospital Medical College, New York, 1896; served during the World War; was accepted as a

major in the medical corps of the regular army in 1920; aged 63; died, October 7.

A. Louis Smith, Corry, Pa.; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1897; member of the Medical Society of the State of Pennsylvania; on the staff of the Corry Hospital; aged 58; died, September 11.

William F. Pechuman, Newaygo, Mich.; Physio-Medical College of Indiana, Indianapolis, 1889; Bennett College of Eclectic Medicine and Surgery, Chicago, 1897; aged 66; died, September 12, in the Gerber Memorial Hospital, Fremont, of myocarditis.

John Arthur White, Lindsay, Ont., Canada; Trinity Medical College, Toronto, 1894; University of Toronto Faculty of Medicine, 1894; for many years a member of the board of education and member of the town council; aged 63; died suddenly, July 22.

William P. Goodsmith, Wilmette, Ill.; Rush Medical College, Chicago, 1883; member of the Illinois State Medical Society; on the staff of the Martha Washington Hospital, Chicago; aged 73; died, October 3, of myocarditis and paralysis agitans.

Harvey Howard, Jr., Elmira, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1932; intern at the Arnot-Ogden Memorial Hospital; aged 29; died, September 27, of complications, following an operation for appendicitis.

Newman R. Donnell ✠ St. Louis; Beaumont Hospital Medical College, St. Louis, 1901; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 60; died, September 23, of coronary thrombosis and sclerosis.

John Lyman Powell, Friendship, Tenn.; Medical Department, University of Tennessee, Nashville, 1899; member of the Tennessee State Medical Association; aged 58; died, September 24, in the Methodist Hospital, Memphis, of uremia.

F. X. Zenon Archambault, Barre, Vt.; School of Medicine and Surgery of Montreal, Que., Canada, 1907; member of the Vermont State Medical Society; on the staff of the Barre City Hospital; aged 58; died, August 3, of angina pectoris.

Wilhelm Henry Vorbau ✠ Lima, Ohio; Starling-Ohio Medical College, Columbus, 1913; member of the American Psychiatric Association; superintendent of the Lima State Hospital; aged 44; died, October 7, of acute myocarditis.

J. Artheme Breton, Montreal, Que., Canada; University of Montreal Faculty of Medicine, 1923; professor of bacteriology at his alma mater; member of the Society of American Bacteriologists; aged 37; died, May 1, at St. Hyacinthe.

James Joseph Carroll ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1893; fellow of the American College of Surgeons; oculist and aurist to St. Joseph's Hospital; aged 66; died suddenly, August 29, of heart disease.

George W. Scott ✠ Randolph, Vt.; Baltimore Medical College, 1892; member of the Associated Anesthetists of the United States and Canada; on the staff of the Randolph Sanatorium; aged 64; died, August 26, of heart disease.

Winfield Ackley, Juniata, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1875; Rush Medical College, Chicago, 1880; aged 84; died, September 9, in the Mary Lanning Memorial Hospital, Hastings, of prostatic disease.

Robert James Niddrie, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1890; Victoria University Medical Department, Coburg, 1890; on the staff of St. Joseph's Hospital; aged 68; died suddenly, July 16.

Wallace Bennett Cannon, Hampton, Va.; Medical College of Virginia, Richmond, 1920; member of the Medical Society of Virginia; aged 38; died, September 18, in the Veterans' Administration Home, of gastric ulcer.

Alexander M. Francis, Saginaw, Mich.; Detroit College of Medicine, 1896; member of the Michigan State Medical Society; aged 58; on the staff of St. Luke's Hospital, where he died, September 29, of cholelithiasis.

Franklin Albert Martin ✠ Pana, Ill.; Missouri Medical College, St. Louis, 1898; served during the World War; on the staff of the Huber Memorial Hospital; aged 58; died, September 30, of angina pectoris.

Sophy Ksido, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1931; intern, Philadelphia General Hospital; aged 26; died, September 30, of a skull fracture received when struck by a truck.

Max Miller ✠ Newton, Kan.; State University of Iowa College of Medicine, Iowa City, 1884; on the staff of the Bethel Deaconess Home and Hospital; aged 74; died, September 14, of heart disease.

Francesco Guglielmo Bianchi, New York; Royal University of Naples Faculty of Medicine and Surgery, Naples, Italy, 1899; aged 55; died, September 20, in the Bellevue Hospital, of morphine poisoning.

Spencer C. Graves, St. Louis; College of Physicians and Surgeons in the City of New York, 1884; aged 75; died, September 18, in St. John's Hospital, of bronchopneumonia and chronic myocarditis.

W. Frank Ashmore, Greenville, S. C.; Atlanta Medical College, 1894; member of the South Carolina Medical Association; aged 60; died, September 28, of hypertensive cardiovascular disease.

Julian Smith Woodruff ✠ Charlotte, N. C.; University of Maryland School of Medicine and College of Physicians and Surgeons, 1920; aged 38; died, September 27, of cerebral hemorrhage.

August C. Ackerman ✠ La Fayette, Ind.; Hahnemann Medical College and Hospital, Chicago, 1883; aged 72; died, September 25, in the La Fayette Home Hospital, of bronchopneumonia.

George Robert Douglas Lyon, Rivers, Manit., Canada; McGill University Faculty of Medicine, Montreal, Que., 1906; for many years chairman of the school board; aged 52; died, July 30.

Andrew Warren Harris ✠ Muskogee, Okla.; Memphis (Tenn.) Hospital Medical College, 1909; served during the World War; aged 56; died, May 6, of a self inflicted bullet wound.

William Baxter Weedin, Aspen, Colo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; aged 60; died in May, of septicemia, following osteomyelitis of the femur.

John Cecil Bickley ✠ Waterloo, Iowa; New York Homeopathic Medical College and Hospital, 1907; on the staff of the Allen Memorial Hospital; aged 49; was drowned, August 9.

William Gustine Brown ✠ Lewisburg, Ohio; Miami Medical College, Cincinnati, 1885; member of the county board of health; aged 77; died, September 28, of cerebral hemorrhage.

Andrew Mackay, Woodstock, Ont., Canada; Victoria University Medical Department, Coburg, 1871; Bellevue Hospital Medical College, New York, 1871; aged 90; died, July 7.

Walter Newton Fowler, Kalamazoo, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1889; aged 64; died, September 18, of valvular heart disease.

William Stanley Bond, Hubbard, Ohio; Starling Medical College, Columbus, 1890; formerly health officer of Hubbard; aged 71; died, August 8, of cerebral hemorrhage.

Henry A. Schroeder, Independence, Mo.; Medico-Chirurgical College of Philadelphia, 1899; aged 59; died, September 21, of chronic myocarditis and cirrhosis of the liver.

George Washington Hiett ✠ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1881; aged 78; died, August 18, of carcinoma of the stomach.

Samuel J. Dobson ✠ Edna, Kan.; College of Physicians and Surgeons of Chicago, 1896; aged 66; died suddenly, September 17, at Independence, of heart disease.

Florence Meder, Louisville, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1898; aged 55; died, September 16, of chronic myocarditis.

William C. Werts, Reading, Pa.; Baltimore Medical College, 1904; aged 52; died, August 17, in the Jefferson Hospital, Philadelphia, of carcinoma of the pancreas.

John Isaac Baker, Nashville, Mich.; Cincinnati College of Medicine and Surgery, 1877; aged 76; died, September 23, in Grand Rapids, of cerebral hemorrhage.

Elmer Newton Glascock, Mill Shoals, Ill.; St. Louis University School of Medicine, 1905; aged 52; was found dead in bed, September 26, of heart disease.

Oliver Ernest Milot, Louiseville, Que., Canada; School of Medicine and Surgery of Montreal, 1893; formerly county coroner; aged 66; died, August 16.

Ethan Freeman Staats, Sedalia, Mo.; Barnes Medical College, St. Louis, 1897; formerly county coroner; aged 75; died, August 1, of cerebral hemorrhage.

Charles Raymond Brenner ✠ San Diego, Calif.; Jefferson Medical College of Philadelphia, 1914; aged 44; died, September 17, of chronic myocarditis.

William Edwin Spence, King City, Mo.; St. Joseph Medical College, 1887; Jefferson Medical College of Philadelphia, 1891; aged 70; died, August 31.

George Ernest Sherman, Cambridge, Mass.; Tufts College Medical School, Boston, 1905; aged 57; died, August 26, of chronic nephritis and myocarditis.

Francis Marion Ihrig, Los Angeles; Eclectic Medical Institute, Cincinnati, 1880; aged 86; died, September 2, of arteriosclerosis and heart disease.

Herbert Harold Fritts ⊕ Shiloh, N. J.; Denver and Gross College of Medicine, 1907; mayor of Shiloh; aged 59; died, September 8, of angina pectoris.

John A. Gardner, Toledo, Ohio; Starling Medical College, Columbus, 1880; aged 80; died, August 20, in Asheville, N. C., of uremia and chronic nephritis.

Emma A. Warner, Butte, Neb.; Sioux City (Iowa) College of Medicine, 1893; aged 71; died, July 23, in Witten, S. D., of cerebral hemorrhage.

Frank Greene Ellis, Veterans' Administration Home, Kan.; Barnes Medical College, St. Louis, 1906; aged 63; died, September 13, of angina pectoris.

Oscar Rotter, New York; Medical Department of the University of the City of New York, 1891; aged 67; died suddenly, October 3, of heart disease.

Daniel Jefferson Rogers, Glennville, Ga.; Atlanta Medical College, 1885; aged 71; died, September 20, in a hospital at Jesup, of chronic nephritis.

Charles Dalton Fillebrown, Camden, Maine; Harvard University Medical School, Boston, 1887; aged 68; died, September 16, of heart disease.

Jacob Benjamin Chaiken ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1911; aged 44; was killed, October 5, in an automobile accident.

Charles Lawrence Furman, Utica, N. Y.; Bellevue Hospital Medical College, New York, 1877; aged 78; died, August 20, of bronchopneumonia.

William Monroe Lyday, Brevard, N. C.; College of Physicians and Surgeons, Baltimore, 1885; aged 67; died, August 15, of cerebral hemorrhage.

Allie B. Wilburn, St. Louis; Barnes Medical College, St. Louis, 1900; aged 57; died, May 31, in Pine Bluff, Ark., of cerebral hemorrhage.

Edward Charles Arthur, Nelson, B. C., Canada; Trinity Medical College, Toronto, Ont., 1888; health officer of Nelson; aged 75; died, July 6.

Leroy Bryant, Maxeys, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905; aged 49; died, September 24, of pneumonia.

Frederick J. Tunmore ⊕ Rochester, N. Y.; University of Buffalo School of Medicine, 1894; aged 68; died, May 31, of chronic myocarditis.

Emma Tolbert Schreiner, Philadelphia; University of Michigan Homeopathic Medical School, Ann Arbor, 1880; aged 75; died, May 7.

Walter Vincent Trombley, Hartford, Conn.; Tufts College Medical School, Boston, 1918; aged 42; died, August 19, of heart disease.

Stephen Alden Sylvester, Lakeland, Fla.; Boston University School of Medicine, 1875; aged 84; died, September 18, of arteriosclerosis.

Willis L. Stearns, Mason City, Iowa; Rush Medical College, Chicago, 1894; aged 61; died, September 5, of valvular heart disease.

Alton U. Wells, Mount Olivet, Ky.; Hospital College of Medicine, Louisville, 1907; aged 58; died, September 26, of heart disease.

Edgar A. Hanna, Ansley, Neb.; Ensworth Medical College, St. Joseph, Mo., 1895; aged 59; died, August 23, of cerebral hemorrhage.

Richard Earl Burns ⊕ Hayward, Calif.; State University of Iowa College of Medicine, Iowa City, 1908; aged 47; died, May 24.

Turner Eli McKinney, Gordonville, Texas (licensed, Texas, under the Act of 1907); aged 57; died, September 18, of heart disease.

George S. Bolt, Herrick, Ill.; Missouri Medical College, St. Louis, 1883; aged 72; died, October 5, of angina pectoris.

George B. Jamieson, Barrie, Ont., Canada; Trinity Medical College, Toronto, 1900; aged 64; died, July 7.

James Sidney Whitley, Oakland, Calif. (licensed, Indiana, 1897); aged 77; died, July 5.

Bureau of Investigation

NUSS RESEARCH LABORATORY

Enter the "Master Hormones" as Therapeutic Agents

Physicians in various parts of the country are receiving advertising material in the form of mimeographed typewritten circulars from the Nuss Research Laboratory of Elkland, Pa., which seems to be a name used by Dr. W. W. Nuss. According to the records of the American Medical Association, Dr. Nuss was born in 1866, holds a diploma from the Hahnemann Medical College and Hospital, Philadelphia, for 1892, and a Pennsylvania license of the same year. He is not a member of the American Medical Association. A few years ago Dr. Nuss seems to have been one of the disciples of the late Albert Abrams, at the time that the latter was exploiting his "electronic reactions"—the most preposterous piece of medical buncombe of the century.

Dr. Nuss today is featuring what he is pleased to call the "Master Hormones." In the advertising matter that he is sending out, we are told:

"These hormones are derived from the Medulla Oblongata and the uterus in the female and from the Medulla Oblongata and the Prostate in the male, and are in health about fifteen times stronger than any other hormones found in the body."

One learns from the same source that the Master Hormones are put up in tablet form and "are made in two-grain size by one of the best homeopathic manufactures [*sic!*] in America." Dr. Nuss states that the Nuss Research Laboratory furnishes all the raw material for the tablets and "to avoid the expense of bookkeeping and collection," sells only for cash. We are then told:

"We have selected six remedies which we believe will meet with the approval of most physicians as follows:

No. 53—Prostate and Medulla (male).
No. 54—Uterus and Medulla (female).
No. 55—Hormones from male egg (male).
No. 56—Hormones from female egg (female).
No. 57—Vegetable Hormones (either sex).
No. 58—Biological Hormones (either sex).

"Made in potencies from 3x to 18x at $3.60 per thousand (Dosage for Adult 2 tablets 3 times daily). They are packed in glass bottles of 1M, 2M and 4M. Postage prepaid anywhere in U. S."

Dr. Nuss also notifies the profession that his "laboratory service is open to all of our drug users." Most important, however, is the claim made that where the physician is uncertain about the diagnosis, Dr. Nuss states "We can make a Positive Diagnosis for a small charge."

One is not altogether clear as to the thesis that the Nuss Research Laboratory—or Dr. W. W. Nuss—would develop, but the following quotation from the material that is being sent out, given verbatim, may allow one to evaluate either the theories laid down by Dr. Nuss or, what is more likely, the probable scientific background of the propounder of those theories:

"Nature has designed a wonderful system, and we can now adopt nature's method for the cure of those that are chronically ill, we can convert the healthy hormones from biological sources, or from healthy plant life, into an agent that will correct the imbalanced body, to a body full of Life and Vigor.

"Anything that lowers the powers of metabolism and general vitality of the body, is laying the foundation for one or more of the chronic diseases.

"The disease conditions that cause the lowering of the fundamental powers of the body are the following: Infectious, Contagious, Epidemic, Acquired and Congenital.

"Diseases as acquired or congenital: Syphilis, Gonorrhea, Undulant or Malta Fever, Avian or Chicken T. B., Influenza and the various Food, Diseases, Serum and Vaccine Toxins, are probably the most important causes of chronic diseases, embracing the following diseases in their various intensities and ramifications.

"Tuberculosis, Sarcoma, carcinoma, Fibroids, Diabetes, Neurasthenia, Hysteria, Dementia Precox, Paranoid, Senile Dementia with the various concomitant conditions as Anemia, Blood Pressure changes, Skin and Functional Disorders, Lack of resistance, Mental and Physical Instability."

It seems, too, that Dr. Nuss has a book that is just off the press and which is sent complimentary to all those who purchase any of the Master Hormones—a variant of the old free-chromo-with-every-package of tea idea. To others the book costs $1.25.

The profession will learn with interest from some of the material sent out by the Nuss Research Laboratory that hyper-

alkalinity is the real cause of heart disease and that Nuss Research Laboratory's "No. 49" will relieve it in ten days. Physicians are told that "paralysis agitans is due to a poliomyelitis and, that being so:

"Cure the poliomyelitis and your agitans case forgets to shake. Our 60 and 61 will do all you ask."

Dr. Nuss also states that "tuberculosis associated with carcinoma of the lungs" is curative, while "hyperthyroidism is reducible in two weeks" by the use of "our 55 or 56." "From a clinical standpoint," says the Nuss Research Laboratory, "a big surprise awaits the new user of the Master Hormones." We wonder.

Correspondence

WANTED: A PROPER ACCOUNTING OF FREE MEDICAL SERVICE

To the Editor:—Although the annual reports of hospitals are valuable sources of information concerning certain hospital activities, they are strangely silent in relation to one of the major aspects of hospital service; namely, the gratuitous service of physicians which is bound up with ordinary hospital practice. Those who have been identified with hospital administration and have shared in the preparation of hospital reports know that the omission is due to thoughtlessness and not to any desire to conceal a vital fact in medicosocial economics. Nevertheless, it is high time for hospitals to mend their ways.

I shall not attempt here to discuss the question whether the members of active staffs of hospitals and dispensaries are sufficiently rewarded for their services in the free wards and the dispensary by the enhancement of their professional prestige, by privileged access to research laboratories, by preferential right to the use of rooms for private patients, or in other ways. My own opinion is that no valid general answer to this question can be given, for, although in some instances the indirect rewards of free hospital service are easy to trace and may be regarded as valuble returns for otherwise unpaid hospital work, these alleged rewards in many instances confer little real benefit; they are least valuable in communities in which all or nearly all reputable practitioners have hospital or dispensary connections. The point that I wish to make here is that, with no desire to distort the facts but through an oversight that may be forgiven since it has not been deliberate, hospitals (except in rare instances) have been accustomed to report their activities in a manner which is one sided and inadequate, in that it does not clearly expose to view the nature, the volume or the relative weight of the contributions made by physicians to free hospital and dispensary service.

Pick up the report of your local hospital and see whether what I have just said is not true. A hospital will tell you that in the course of a year 1,000 indigent patients, admitted to its public wards, were given 12,000 days of free treatment at a maintenance cost of, say, $4 a day, or $48,000 for the year. The report will point out that in addition to this service the institution treated in its outpatient department, say, 5,000 patients to whom 20,000 free or near-free consultations were granted at a net cost to the hospital of 60 cents a consultation, or $12,000 for the year. On this basis, the hospital will claim credit for free work involving the expenditure of $60,000 of community funds, derived in part from voluntary gifts and in part, perhaps, from a municipal grant. Buried somewhere in the text of the report there may be a brief word of appreciation, written by the president of the board, of the medical staff's participation, in the hospital's activities; but the reader will look in vain for anything like an adequate description of the free work contributed by the staff or an understandable estimate of the money value of that work. The typical picture of the hospital's activities which is presented to the community is incomplete, and the usual hospital report has little value to the student of medical economics who wishes to know just how medical service is obtained for the poorer members of society and who foots the bill.

I have such confidence in the fair-mindedness of hospital boards that I believe that when the significance of this matter is made clear to them the proper remedy will be applied. But the desired reform in hospital reporting will come slowly unless there is an active demand for it on the part of hospital medical staffs, and for the formal presentation of this demand existing administrative machinery can be utilized, for although the business administration of the community hospital is now pretty generally and, I think, properly regarded as the function of a lay board, most progressive hospitals include in their organization a conference committee of mixed medical and lay membership, whose duty it is to consider matters of administration which are of interest to both the lay board and the medical staff. A useful service would be performed by the Bureau on Medical Economics of the American Medical Association if it made use of its wide connections and its strategic position to urge suitable action along this line on members of the American Medical Association who are members of mixed hospital committees.

I can perhaps best bring out the importance of the matter by an attempt to compute roughly but conservatively the value of the free service of the imaginary hospital from whose report I have just borrowed a typical record of free service. It was assumed that the hospital in question admitted 1,000 free patients in the course of a year. Probably three fifths, certainly one half of this number would be surgical cases and we should not be far out of the way if we assumed that out of 1,000 patients, 500 required major surgical operations. If we put the money value of each major surgical procedure at $100, the surgical staff will have contributed $50,000 worth of free surgical work. We could hardly be accused of exaggerating the value of medical service rendered in the wards if we said that the work of the staff, amounting to 12,000 days of free care of acutely sick patients, was worth $3 a day, or $36,000 for the year; nor would it be extravagant to assign to each of the 20,000 consultations in the outpatient department a value of $1 a consultation, or $20,000 for the year. Now let us add up: (1) surgical work, $50,000; (2) ward service, $36,000; (3) dispensary service, $20,000. The total is $106,000, a moderate estimate of the value of free professional service in a hospital whose parallel cash outlay amounted to only $60,000. I am, of course, aware of the fact that $60,000 would not, in such a case, represent the total amount contributed by the community, since it covers current expenses only and does not take into account capital outlay, which logically must be included as an additional community contribution. But after analyzing the reports of numerous hospitals in the eastern part of the country, I am prepared to say that the money value of the free service given by the staff is in many cases at least equal to the cash contributions for all purposes which are made by the community. Moreover, whatever the relative value of these two intimately associated services may be, it is important that the facts should be disclosed by hospital reports, for without them the medical economist and the legislator must remain ignorant of knowledge which is indispensable to a proper understanding of social processes and public needs.

Whether the medical profession can afford to continue its service to hospitals without being paid for it directly (or paid for it at all) is a question that merits consideration by itself; here and there the voice of an individual or of a committee has been raised in protest, but, generally speaking, physicians thus far have eagerly sought opportunities for hospital service without pay. I hope I have shown (and it is scarcely a discovery) that the unpaid service of hospital staffs is a major element in hospital economics and that it is desirable that hospitals bring out the facts by a method of presentation to be agreed on between hospital boards and hospital staffs. A

statement of free medical service in estimated dollar value, based on prevailing local rates, would probably be most readily understood by the lay public, but if an agreement cannot be reached as to a scale of money values, the work could readily be tabulated in terms of service units. In any event, the physician should be given his due!

S. S. GOLDWATER, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ESSENTIAL HYPERTENSION

To the Editor:—A woman, aged 29, has had hypertension for five years, with a systolic pressure of 180 to 200 and a diastolic pressure of 120 to 140. Her only complaint has been frequent severe headache. She has one child, aged 14. Her family history and her past medical history are irrelevant. In April, 1932, she developed a hemiplegia involving the right side of the face, the right arm and leg, and her speech; the onset was gradual without loss of consciousness or vomiting. A thorough examination in a hospital revealed no evidence of chronic nephritis. The blood count, blood picture, chemical examination of the blood, Mosenthal test and Wassermann reaction were all normal. The retinal vessels showed thickening. None of the peripheral arteries were thickened. Her weight at that time was 195 pounds (88.5 Kg.). Power returned rapidly in the paralyzed limbs, so that now, less than four months later, she has complete use of her muscles, with some ataxia of the leg when tired and slight thickness of speech when excited. The weight is now 163 pounds (74 Kg.). The blood pressure ranged from 130/104 to 140/110 for two months but is now 180/140. She feels well and has no headache. The menses are irregular, are from three to seven weeks apart, and last from two to ten days. This is a case of essential hypertension with a very bad prognosis. Treatment has consisted of weight reduction through diet adequate in protein but low in starch and fat; massage; rest and freedom from worry; sedatives, especially phenobarbital, and the exhibition of thyroid substance, 1 grain (0.065 Gm.), daily for a month. I shall appreciate any suggestions as to treatment. Would any ovarian or pituitary preparation be of value?

M.D., New Jersey.

ANSWER.—The diagnosis of essential hypertension for this case is obviously correct but is also relatively meaningless. Curative therapy must be based on etiology; the data given throw little light on the causative factors in this instance of hypertensive disease. That extensive, irreparable and irrevocable arterial change has already occurred, at least in the cranial arteries, is evident from the cerebral accident and the retinal angiosclerosis. Some of the many possible etiologic factors may have ceased to exist or be nonamenable to therapy, but other factors may be persistently aggravating and perpetuating the hypertensive disease. Of the former, irrevocable, type the following possibilities must be considered: familial hypertension, intoxication in pregnancy (pregnancy apparently occurred at the immature age of 15), past infections (particularly typhoid and influenza), and previous noninfective intoxications. Possible factors that are still amenable to therapy are: foci of infection, abuse of condiments, emotional tension from real or imaginary sources of worry, ovarian dyscrasias, and possible allergic or anaphylactic intoxication.

That the arterial system as a whole is not extensively sclerosed is evident from the fact that the arterial tension fell to 130/104 at least temporarily. Arrest of the progression of the disease may therefore be considered possible, although, as stated in the inquiry, the prognosis is not good. It is extremely doubtful whether ovarian or pituitary preparations would be of value; pituitary preparations might even be injurious. Ovarian medication by mouth is useless. Continuance of the dietary control of the obesity is strongly indicated. A liberal fluid intake is of value and should be urged unless there is evidence of cardiac exhaustion. Potassium thiocyanate is an effective vasodilator with prolonged action but is so toxic that it must be considered decidedly dangerous. Bismuth subnitrate, in doses of 0.6 Gm. thrice daily, may prove of value as a vascular sedative if the arterioles are not being constantly further irritated by active etiologic factors and the disease has not progressed to irreversible arteriolar sclerosis. Sodium bromide, 0.6 Gm., thrice daily, may be continued for months and perhaps is more effective than the barbituric acid derivatives over a long period; a tolerance to the barbitals is frequently acquired which necessitates increase of dosage until the danger of intoxication is imminent. Careful and frequently repeated observation of the cardiac reserve is urgently indicated. Any diminution of the systolic tension without a corresponding reduction of the diastolic tension is ominous, particularly if the pulse rate rises simultaneously. Cardiac support with digitalis and the xanthine preparations may be required later.

DISINFECTION OF SHOES AND STOCKINGS IN RINGWORM OF THE FEET

To the Editor:—Some time ago instructions were printed in Queries and Minor Notes for fumigating shoes after contamination with ringworm of the foot. As I am at present out of reach of medical literature would it be possible to send me a reprint or repeat the instructions? Is it not possible to sterilize stockings and socks otherwise than by prolonged boiling? The frequent chronicity of the condition seems due to reinfection, but especially now it is difficult to persuade sufferers to destroy all silk and wool hosiery, as well as shoes. Is there no chemical that will destroy the parasite without ruining fabrics? It seems unfortunate in view of the prevalence of ringworm of the foot that most of the literature on the subject is contained in the advertising pages of lay journals. I should be glad if you could omit name in publication.

M.D., New York.

ANSWER.—Shoes may be fumigated by inserting in each a piece of blotting paper on which a teaspoonful of strong formaldehyde solution has been poured. They should be wrapped up tightly in paper, left for at least twenty-four hours, and then aired thoroughly before being worn. Silk and wool may be soaked, after washing, in a 1:1,000 solution of corrosive mercuric chloride for a day, and then carefully rinsed before drying. There is no need of destroying clothing. Much of the supposed reinfection is possibly recurrence from organisms hidden in the skin. Treatment should be continued for a long time after apparent cure. We have not been impressed with any paucity of scientific literature on this subject but agree that the unscientific kind is generously distributed.

HEALING OF FISTULA AFTER LAPAROTOMY

To the Editor:—Recently I examined a girl, aged 16 years, who had a fecal fistula which developed about three weeks after a laparotomy performed for a ruptured appendix. Laparotomy was done six months ago. She had a stormy convalescence. For the past four months the fistulous opening has been about the size of a match head and may go a day or two without drainage. The opening is at McBurney's point. Evidently the tract arises from the cecum near the ileocecal valve. There are two incisions, one right rectus which is nicely healed, and the McBurney evidently for counter drainage, which the fistula passes through. What suggestions have you for healing this fistula? Please omit name.

M.D., Wisconsin.

ANSWER.—Some opaque material, such as iodized poppy-seed oil, might be injected into the fistulous tract. If there is a large pocket shown in the roentgenogram, it might be opened up and drained or curetted.

It is possible that a foreign body, such as a purse-string linen suture, may be the cause of the persistent sinus. Ordinarily such suture material will be expelled in time and the sinus will close.

If the sinus goes directly to the bowel, open operation may be necessary, but one should wait until there is little chance of its closing spontaneously. Meanwhile, application of the silver nitrate stick or local curettage of the granulation tissue that can be reached easily may be done from time to time.

One would be inclined to wait a few weeks longer. Open operation will necessitate entering the peritoneal cavity and freeing the bowel from the abdominal wall with invagination of the sinus. This should be done only by one trained to meet any emergencies.

TRAUMA AND DEMENTIA PARALYTICA

To the Editor:—I am interested in a patient, a white man, aged 43, who was in an automobile accident in March, 1932. Prior to this he was well. Since then he has deteriorated mentally and I have sent him to an insane asylum. At the time of the accident, he hit his head and back. His blood Wassermann is 4+ and the spinal fluid shows a paretic curve one time and a meningitic curve the next time. The spinal fluid Wassermann reaction is negative. Do you think the injury to the head has brought about acute syphilis of the brain? Please give me medicolegal references. Please omit name.

M.D., Maryland.

ANSWER.—If the patient was entirely normal mentally prior to the accident, and if the head blow was of sufficient force to render him unconscious, and to insure the fact that there was real injury to the brain, and if the symptoms appeared within a few weeks of the accident, one would have to assume that the accident precipitated the symptoms of dementia paralytica. The following reference is to an article discussing this matter:

Klauder, J. V., and Solomon, H. C.: Trauma and Dementia Paralytica, THE JOURNAL, Jan. 3, 1931, p. 1.

POSSIBLE ACROMEGALY

To the Editor:—A child, aged 14, weighing 120½ pounds (54.6 Kg.) and 68½ inches (172.8 cm.) in height, is fairly well nourished and apparently strong. About two years ago the feet and legs from the knee down began to grow excessively. The child wears number 11 shoes and is unable to lace them on account of the size of the ankles and legs. The hands are enlarged, the arms long; the body and thighs are small. Physical examination and laboratory study are otherwise negative. Can you suggest a possible diagnosis and treatment? If you publish this in your column kindly omit name.

M.D., Georgia.

ANSWER.—Until several years ago it was generally considered that acromegaly did not occur before the twentieth year. This opinion is certainly incorrect, because there are a number of cases which show some symptoms of acromegaly at the period of puberty. Falta described a series of cases which he designated as early acromegaly. A careful history from adults with acromegaly frequently discloses that the patient had large hands and feet since early youth. It is known that the disease is characterized by its slow course and frequently the first symptoms are improperly interpreted; in the juvenile types, several authors have described the familial occurrence of acromegalic stigmas. There are several cases reported of acromegaly in early childhood probably of congenital origin. There is recorded a new-born patient who presented an abnormally large nose and tongue, large flapping ears and a prominent chin.

Roentgenologic examination may disclose an enlarged sella. There may be a diminished sugar tolerance. The patient should be carefully studied to determine whether there is any evidence of hypophyseal tumor. If it can be satisfactorily proved that there is a tumor, surgical treatment is indicated. No beneficial results should be expected from glandular therapy.

FOX-FORDYCE DISEASE

To the Editor:—For the past four months I have been treating a patient who is suffering from Fox-Fordyce disease. For the first three weeks she was given injections of 1 cc. of theelin intramuscularly twice weekly, for the next eight weeks one injection each week, and then two injections a month. In addition, for the past two and a half months she has been given one-fourth grain (0.016 Gm.) of thyroid (P. D. & Co.) twice daily. Prior to coming under my attention the patient was given a series of roentgen treatments by some local doctor without effect. Under the therapy outlined she has shown some subjective improvement without objective change. I should appreciate any information you may be able to give me as to new developments in the treatment of Fox-Fordyce disease or any suggestion that you may have in the treatment of this particular patient.

MAURICE W. GUMPERT, M.D., Los Angeles.

ANSWER.—The resistance of Fox-Fordyce disease to treatment is so characteristic that it is by some writers looked on as of aid in diagnosis. The disorder is generally regarded as due to dysfunction of the apocrine glands secondary to disturbed activity of the endocrine glands, the ovaries and thyroid being particularly incriminated. In some instances endocrine therapy is of value, and x-rays are occasionally beneficial but not often curative. Carbon arc lamp, electrodesiccation, carbon dioxide, autohemotherapy and psychotherapy are other agents that have been recommended. Neumark employed insulin therapy in one case in which the patient had functional trouble with the sex glands and the thyroid. The results were apparently good, but the condition soon recurred.

USE OF ULTRAVIOLET RAYS IN TUBERCULOSIS

To the Editor:—In a girl, 11 years old, I diagnosed tuberculosis of the lung, which was confirmed by roentgen examination. She was in a public tuberculosis sanatorium six months but is now home and feels fine. She has a temperature in the afternoon of 99.8 F.; the pulse is 84. She is gaining in weight. She goes back for alpine lamp treatment. The doctor and nurse giving the lamp treatment say "Keep the child out of the sunshine." I have been the family physician for years. Today when I was giving a lot of advice I said she should be exposed naked to the sunshine for from five to ten minutes each day, the period being gradually increased. Now the mother is in a quandary. Please advise when and why sunbaths are harmful in tuberculosis of the lungs. Please omit name.

M.D., New Jersey.

ANSWER.—It is most important to know the pathologic type of tuberculosis. A childhood type of tuberculosis with a residual pulmonary hilar gland involvement is an indication for heliotherapy. In the adult type of tuberculosis, occurring in childhood, heliotherapy—either artificial or natural—should be used with great caution. In the active tuberculous process of the exudative type, particularly, great harm can be and is frequently done. In such cases an increase in the exudate is frequently found, following this form of therapy. In cases of fibroid tuberculosis with little or no exudate, heliotherapy has been used with some success, but here, too, only with great caution. This patient, with a temperature of 99.8 F., apparently has a mild toxemia and ultraviolet therapy should be given very cautiously. If the indication for such treatment is present, one may alternate the giving of natural heliotherapy (sunshine) with ultraviolet radiation from artificial sources, not giving the two the same day but reserving the artificial light for cloudy days. One also should observe precaution concerning the dosage when alternating between these two types of therapy, giving smaller dosage at each alternate period, as tolerance established for one form of therapy does not hold for the other.

DISINFECTION OF SWIMMING POOL

To the Editor:—Could you tell me the most satisfactory way of keeping a public swimming pool disinfected? This pool is located in Cuernavaca, Mexico, whose climate resembles that of southern California. It is open to the sky and holds approximately 250 cubic meters of water. The water is changed once a week and the walls of the pool, which are made of a combination of tile and cement, are thoroughly brushed at this time. Kindly let me know the amount, kind and method of use of the disinfectant which would be most efficient for keeping the pool in a sanitary and healthful condition.

GREENSHAW-MANDEL, M.D., Cuernavaca, Morelos, Mexico.

ANSWER.—The best method of disinfecting a swimming pool of the type described is by daily dosing with chlorinated lime. The amount required will vary with the type of water, the number of bathers, and the supervision of bathers, but would probably be from 6 to 10 Kg. daily. The easiest method of application is to tie the lime in a cloth bag suspended at the end of a pole and drag the bag through the water until the chlorinated lime is as completely dissolved as possible. This should be done each night after all swimmers have left the pool. If ammonia can be used as an additional dosing agent, the amount of chlorinated lime can be reduced to not more than 4 Kg. daily. Household ammonia may be used in the ratio of 10 parts of chlorinated lime to 1 part of ammonia. The use of ammonia is recommended because the chloramines formed are more stable than the chlorine liberated from the chlorinated lime. The disinfection will be slower but will continue over a longer period of time. This is obviously an advantage in swimming pool sanitation. Some experimentation under bacteriologic control will doubtless be required before the proper amounts of the reagents can be determined.

TESTS OF MUSCLES OF EYE

To the Editor:—1. What is the test used and how used to estimate the amount excess or inefficiency of the eye muscles in cases of squint? 2. Why do not the oblique muscles of the eye cause the eye to rotate beyond the median line in the case of paralysis of the external rectus muscle, thus replacing the action of the external rectus muscle?

F. V. GAMMAGE, M.D., Akron, Ohio.

ANSWER.—1. There are many tests used to estimate the position and efficiency of the eye muscles in squint. In the short space allotted to answers, it is impossible to describe or evaluate them. They are described in "Ocular Muscles," by Luther Peter, Philadelphia.

2. An oblique muscle, when unopposed, is incapable of a simple rotation. As all ocular motion is the result of composite action of the extrinsic eye muscles, the paralysis of any one muscle throws out the balance and as a result the eye cannot be moved in any primary direction, without deviation, by the remaining functioning muscles.

HYDROCEPHALUS

To the Editor:—A young woman has had two pregnancies, both of which turned out to be hydrocephalic. Her family and personal history are negative; her Wassermann reaction is negative. She is anxious to have a child. What would you advise in this case?

VERNER P. JOHNSON, M.D., Delano, Minn.

ANSWER.—Whether or not hydrocephalus is inherited is a disputed point. Several authorities believe that it is not inherited but that it is due to some disease of the uterus and that until this is improved the possibility still remains of recurrence of the accident. In practice, many women have delivered monstrosities and also healthy babies, so that all that can be said to this particular patient would be that the accident will probably not recur and that she might hope for a healthy child. Before a new pregnancy, however, curettage and diathermy treatments of the uterus would be justifiable and general alterative tonics, iron, arsenic, mercury and iodine, and possibly a little thyroid should be exhibited during pregnancy. It is unfortunate that knowledge of these conditions is so conjectural.

INFECTION OF NAILS

To the Editor:—A man, aged 38, first noticed in February, 1932, that his finger nails were turning yellow. They have remained this color and are now showing a tendency to retract from the sides and become elevated in the center. They are hard and dry and thin; growth is very slow. The toe nails are now showing the same change in color. Physical examination shows a dark skin, with acne scars, and a fine nettle rash between the nipples, around the umbilicus, and across the lower part of the back. This has been present for fourteen years with no scaling. The patient weighs 180 pounds (81.6 Kg.) and feels well. The conjunctivae are clear. Blood and urine examinations give negative results. There is a purulent discharge from the nose, and the tonsils show chronic infection. What is your opinion as to possible etiology, prognosis and treatment? The patient is mainly interested in trying to find a possible way of disguising the yellow color of the nails so that they will not attract so much attention. Please omit name and address.

M.D., Wisconsin.

ANSWER.—The nail changes described are most probably due to ringworm infection or to one of the chronic dermatoses, such as psoriasis, eczema, or pityriasis rubra pilaris, which are occasionally accompanied by disturbance in the nail plates. Syphilis should likewise be thought of as a possible etiologic agent.

If the disorder is due to ringworm infection, evidences of this disorder are apt, but not necessarily, to be found on the skin of the feet, especially between the toes. An attempt should be made to discover the fungus by examining material taken from the nails after the latter have been treated by potassium hydroxide solution in the usual manner. If this examination is negative, cultures should be made, but it is often difficult to demonstrate the fungus in onychomycosis.

Without further information as to the exact nature of the eruption described as present for the past fourteen years, it is impossible to say whether or not this may be responsible for the condition of the nails.

If a definite diagnosis cannot be established, ringworm infection seems to be the most probable explanation, and it might be well to employ Whitfield's ointment over a period of some months.

LEAD POISONING IN USE OF ACETYLENE TORCH AND IN SOLDERING

To the Editor:—1. Is it possible for a man using an acetylene torch to cut painted steel in a poorly ventilated room to contract lead poison? 2. Also for a man in a tin can factory working as a "floater" to contract the same disease from his work? I understand a "floater" keeps soldered cans (cold) going along a platform.

FRED R. BUECHE, M.D., Steubenville, Ohio.

ANSWER.—1. If the steel is painted with a lead-containing paint, and if the exposure extends over a period of several hours, lead poisoning is a possibility. The temperature of the acetylene torch will readily volatilize the lead. It is unlikely, however, that lead poisoning would be produced by the mere cutting through of two or three pieces of steel.

2. It is unlikely that a worker engaged in the process of "floater" tin can soldering will acquire lead poisoning under conditions of normal operation. This process is essentially automatic. Actual testing of considerable numbers of "floaters" has failed to disclose any signs or symptoms of lead poisoning.

SENSITIVITY TO TOBACCO

To the Editor:—I have a patient, a woman, aged 21, engaged in housework, who is sensitive to tobacco. She was never affected until six years ago, after her father commenced growing tobacco. After it gets about 20 inches high, if she passes through the tobacco, whether it touches her or not, an hour later an eruption occurs the full length of the arms and on the legs up to 3 inches above the knee. It itches and burns until it is almost unbearable. Once the nose and the neighborhood of the eyes were affected. Holding the arms over the hot stove relieves the itching so long as they are held there, but as soon as they are removed from the heat the itching gets worse. Application of either cold or hot water greatly increases the itching. Many dermatitis lotions have been used, without any relief, such as ointment of zinc oxide, kerolysin ointment, solution of potassium permanganate, and magnesium sulphate. X-rays give relief for twenty-four hours, and it gets well in about four weeks, with or without treatment. Some of the best dermatologists have seen and treated the patient. I have failed to see in the literature any similar case. I would appreciate any suggestion as to treatment. She will get infected in the barn after the tobacco is used, and has no trouble after the weed is shipped, until the next crop grows.

L. D. ALLEN, M.D., Smithville, Tenn.

ANSWER.—The patient may be sensitive to some oil in the tobacco leaf which is probably extractable with acetone or alcohol. It may be, however, that she is sensitive to a water soluble material. The history sounds as if the tobacco is actually responsible for the trouble, but one cannot assume this is the case without making a direct test. This test could easily be made by applying a tobacco leaf to the arm and holding it in place with adhesive plaster. The reaction should appear within twenty-four to forty-eight hours in the form of eczema at the site of application.

Treating a case of this type with x-rays would be a mistake because the etiologic factor would not be reached and the skin might be harmed. If the trouble is caused by the oil of tobacco leaf the patient can probably be cured by hypodermic treatment with a suspension of the oil in tiny ascending doses. This would be analogous to poison ivy treatment, which is successful. If the patient is sensitive to a water soluble extract, treatment will be more difficult. Some relief can be obtained by the thorough use of soap and water on the skin after exposure to the leaves. This is due to mechanical removal of the irritating agent.

CULDESAC IN STOMACH

To the Editor:—A man, aged 50, has what has finally been diagnosed roentgenologically as a "cascade stomach." This is said to be congenital. It is associated with a markedly redundant transverse and sigmoid flexure colon. The symptoms are of sudden onset, of two years' duration, with no free periods. They bear no relation to meals or exercise and consist of severe epigastric pain when the accessory pouch is distended with gas and abdominal pain when there is gas in the intestine. The pain occurs in attacks which appear once or twice daily and are relieved only in the supine position on absolute rest. The attacks are of variable duration, location and severity. To date, despite a thorough and complete roentgen study, the source of this gas is undetermined. Gastric lavage reveals no remnants of previously ingested food. Roentgenologically the culdesac is shown to be as long and wide as the stomach proper and communicates through a wide mouth with it. Various measures undertaken to relieve the patient's distress, including a low carbohydrate diet, sodium bicarbonate, bismuth subcarbonate and various carminatives, have been without avail. Fluoroscopically, the distention of the accessory pouch has been shown to be concomitant with the epigastric pain, and in a pain-free interval the pouch is empty. If it is at all possible to treat this condition nonsurgically, I have not heard of it. Can you offer any suggestions as to a course of treatment that may prove of value in controlling these really severe pains?

M.D., New York.

ANSWER.—No statement is made concerning the presence of a diaphragmatic hernia. If one is present, an operation is more serious. In its absence it would seem best to have an operation carried out. The patient may be benefited by the wearing of a ptosis corset. It may be possible that, if the patient lies down after eating, the culdesac may be emptied by gravity. The proper position to assume after eating can readily be determined by roentgen examination. Belladonna, in a physiologic dose, may also relieve the pain, and by relieving the spasm help the culdesac to empty itself more readily.

SUDDEN LOSS OF WEIGHT INDICATION FOR STUDY OF BASAL METABOLISM

To the Editor:—A girl of 17 comes to me with a history of having been under an undue strain at school. This was followed by loss of 8 pounds in two weeks, insomnia and nervousness. She tires readily. Her appetite is poor. Physical examination shows a pulse of 92, blood pressure of 80 systolic and 44 diastolic, temperature 99, red count 4,750,000, white 9,600. Other physical conditions are normal. Rest, good food and suprarenal substance over a period of four months have only helped to keep her weight. What further laboratory examination or treatment would you suggest? Please omit name and address.

M.D., Illinois.

ANSWER.—Perhaps the most important laboratory examination here, in a patient with loss of weight, nervousness and easy fatigability, would be the determination of the basal metabolic rate. Next, with a slight rise of temperature, a roentgenogram of the lungs should be taken. Careful physical examination naturally will reveal any pathologic condition of the heart or lungs. It is difficult to give any further advice until knowledge of the basal metabolism and of the roentgen appearance of the chest is available.

BONICOT

To the Editor:—I understand that there is a product, "bonicot," which has been promoted—mostly in Germany—as removing nicotine from cigar and cigaret smoke. Has this been found satisfactory? L. N. P., Ohio.

ANSWER.—The addition of "bonicot" (a commercial preparation containing ferro-ammonium citrate, citric acid, acetic acid, ethyl alcohol and other substances) to cigars has no significant effect on the nicotine content of the smoke, according to the work of H. Schlossmann and M. Schlesinger (*Klin. Wchnschr.* **11**:371, 1932; *Chemical Abstracts*, July 10, 1932, p. 3617).

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Milwaukee, June 12. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General, oral and clinical.* Los Angeles, Dec. 7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

ARKANSAS: *Basic Science.* Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock. *Regular.* Little Rock, Nov. 8-9. Sec., Dr. Sam J. Allbright, Searcy. *Eclectic.* Little Rock, Nov. 8. Sec., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith. *Homeopathic.* Little Rock, Nov. 8. Sec., Dr. Allison A. Pringle, Eureka Springs.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Dec. 14. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, Nov. 8-9. *Endorsement.* Hartford, Nov. 22. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 8. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, Dec. 13-15. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington.

FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, 706 Franklin St., Tampa.

KANSAS: Topeka, Dec. 13-14. Sec., Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, Dec. 6-8. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

NEBRASKA: Lincoln, Nov. 29-30. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 7-9. Sec., Dr. Edward E. Hamer, Carson City.

NORTH CAROLINA: Raleigh, Dec. 5. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

OHIO: Columbus, Dec. 6-8. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Houston, Nov. 8-10. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 7-9. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke.

WEST VIRGINIA: Morgantown, Nov. 16-18. Sec., Dr. W. T. Henshaw, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 17. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Virginia June Report

Dr. J. W. Preston, secretary, Virginia State Board of Medical Examiners, reports the written examination held in Richmond, June 15-18, 1932. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One hundred and thirteen candidates were examined, 111 of whom passed and 2 failed. Fourteen physicians were licensed by reciprocity with other states and 5 physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine		(1932)	78, 80, 82, 84
Howard University College of Medicine		(1931) (1932)	76, 86, 77, 78
Johns Hopkins University School of Medicine		(1932)	83
University of Pennsylvania School of Medicine		(1930)	82
Meharry Medical College		(1932)	80
Medical College of Virginia		(1905) (1932)	81, 76, 76, 77, 77, 77, 78, 78, 78, 78, 79, 79, 79, 80, 80, 80, 80, 81, 81, 81, 81, 81, 81, 81, 82, 82, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 86, 86, 86, 87, 87, 88, 89, 90, 90
University of Virginia Department of Medicine		(1918) (1926) (1930) (1931) (1932)	82, 84, 82, 88, 78, 79, 80, 80, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87, 88, 89

College	FAILED	Year Grad.	Per Cent
Medical College of Virginia		(1932)	74, 74

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine		(1928)	Dist. Colum.
Bennett College of Eclectic Medicine and Surgery		(1898)	Illinois
Northwestern University Medical School		(1930)	Tennessee
Johns Hopkins University School of Medicine		(1915)	Maryland
Syracuse University College of Medicine		(1909)	New York
Western Reserve University School of Medicine		(1926)	Ohio
Temple University School of Medicine		(1917)	Penna.
University of Pennsylvania School of Medicine		(1924)	Minnesota
Meharry Medical College		(1931)	Tennessee
University of Tennessee College of Medicine		(1927)	Tennessee
Medical Coll. of Virginia		(1914)	W. Virginia, (1930), (1931)	N. Carolina
University of Zurich Faculty of Medicine		(1921)	Ohio

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Johns Hopkins University School of Medicine		(1927)	N. B. M. Ex.
Harvard University Medical School		(1930)	N. B. M. Ex.
University of Virginia Dept. of Med		(1929, 2), (1930)	N. B. M. Ex.

Iowa Reciprocity Report

Mr. H. W. Grefe, director, Division of Examinations and Licenses, Iowa Department of Health, reports 38 physicians licensed by reciprocity with other states and 4 physicians licensed by endorsement from Jan. 1 to Oct. 4, 1932. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1926)	Colorado
Loyola University School of Medicine		(1931, 2)	Illinois
Northwestern University Medical School		(1926)	Illinois
Rush Medical College		(1927), (1929, 2), (1931), (1932) (1930)	Illinois, Michigan, (1931) Ohio
University of Illinois College of Medicine		(1927) (1931)	Michigan, Missouri, (1932) Illinois
Indiana University School of Medicine		(1925)	Indiana
University of Kansas School of Medicine		(1930)	Kansas
Johns Hopkins Univ. School of Med.		(1918), (1919), (1930)	Maryland
Detroit College of Medicine and Surgery		(1930)	Michigan
University of Michigan Medical School		(1931)	Michigan
St. Louis University School of Medicine		(1927), (1929)	Missouri
Washington University School of Medicine		(1927)	Missouri
Creighton University School of Medicine		(1928) (1931)	New Jersey, Kansas, Nebraska (2)
John A. Creighton Medical College		(1912)	Nebraska
University of Nebraska College of Medicine		(1927) (1927), (1929)	Kansas, Nebraska
Long Island College Hospital		(1925)	Nebraska
University of Cincinnati College of Med		(1929), (1931)	Ohio
University of Oklahoma School of Medicine		(1926)	Oklahoma
University of Virginia Department of Medicine		(1929)	Virginia
University of Wisconsin Medical School		(1929)	Wisconsin

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Northwestern University Medical School		(1932)	N. B. M. Ex.
Johns Hopkins University School of Medicine		(1926)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1925)	N. B. M. Ex.
University of Toronto Faculty of Medicine		(1924)	N. B. M. Ex.

Pennsylvania July Examination

Mr. Charles D. Koch, secretary, Pennsylvania Board of Medical Education and Licensure, reports the oral and written examination held in Philadelphia and Pittsburgh, July 5-9, 1932. Four hundred and twenty-eight candidates were examined, 421 of whom passed and 7 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Georgetown University School of Medicine		(1931, 17)	17
George Washington University School of Med.		(1917), (1931)	2
Howard University College of Medicine		(1931, 4)	4
Loyola University School of Medicine		(1932, 2)	2
Northwestern University Medical School		(1931)	1
Rush Medical College		(1932, 2)	2
University of Louisville School of Medicine		(1931, 3)	3
Tulane University of Louisiana School of Medicine		(1920)	1
Baltimore Medical College		(1905)	1
University of Maryland School of Medicine and College of Physicians and Surgeons		(1930, 2), (1931, 9)	11
Boston University School of Medicine		(1931)	1
Harvard University Medical School		(1931, 2)	2
Tufts College Medical School		(1930)	1
University of Michigan Medical School		(1930), (1931, 2)	3
St. Louis University School of Medicine		(1931, 4)	4
Washington University School of Medicine		(1930)	1
Creighton University School of Medicine		(1931, 2)	2
Columbia University College of Phys. and Surgs		(1929)	1
Long Island College Hospital		(1929)	1
Long Island College of Medicine		(1931, 2)	2
Syracuse University College of Medicine		(1930), (1931)	2
University and Bellevue Hospital Medical College		(1931, 3)	3
University of Buffalo School of Medicine		(1931, 2)	2
University of Rochester School of Medicine		(1931)	1
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1931, 63)	63
Jefferson Med. Coll. of Phila.		(1929), (1930, 24),* (1931, 61)	86
Temple Univ. School of Med.		(1929), (1930, 7), (1931, 40)	48
Univ. of Penn. Sch. of Med.		(1928), (1930, 24),* (1931, 47)	72
University of Pittsburgh School of Medicine		(1931, 56)	56
Woman's Med. College of Pennsylvania		(1930, 2), (1931, 6)	8
Meharry Medical College		(1931)	1
Vanderbilt University School of Med.		(1916), (1926), (1931)	3
University of Texas School of Medicine		(1931)	1
Medical College of Virginia		(1930, 2), (1931, 3)	5
University of Wisconsin Medical School		(1930)	1
University of Toronto Faculty of Med.		(1921), (1923), (1924)	3
University of Western Ontario Medical School		(1931)	1
McGill University Faculty of Medicine		(1923), (1931)	2
German University of Prague Faculty of Medicine		(1927)	1

FAILED		
College	Year Grad.	Number Failed
University of Georgia Medical Department	(1930)	1
Hahnemann Med. College and Hosp. of Philadelphia	(1931, 3)	3
University of Pittsburgh School of Medicine	(1931)	1
Meharry Medical College	(1931)	1
University of Toronto Faculty of Medicine	(1931)	1

Mr. Koch also reports 18 physicians licensed by reciprocity with other states and 5 physicians licensed by endorsement of credentials from April 21 to Aug. 26, 1932. The following colleges were represented:

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
Rush Medical College	(1919)	Michigan, (1923) California
State University of Iowa College of Medicine	(1925)	Iowa
University of Maryland School of Medicine and College of Physicians and Surgeons	(1926), (1928)	Maryland
Boston University School of Medicine	(1926)	Massachusetts, Michigan
Detroit College of Medicine and Surgery	(1930)	Michigan
University of Michigan Medical School	(1924)	Michigan
St. Louis University School of Medicine	(1920), (1931)	Missouri
Columbia University College of Phys. and Surgs.	(1915)	New York
Hahnemann Med. College and Hosp. of Philadelphia	(1930)	Delaware
Jefferson Medical College of Philadelphia	(1927) (1929)	Texas, North Carolina
University of Pennsylvania School of Medicine	(1928)	Mass.
University of Tennessee College of Medicine	(1929)	W. Virginia
Medical College of Virginia	(1929)	Virginia

LICENSED BY ENDORSEMENT		
College	Year Grad.	Endorsement of
Harvard University Medical School	(1929)	N. B. M. Ex.
Woman's Medical College of Pennsylvania	(1931, 2)	N. B. M. Ex.
University of Pennsylvania School of Medicine	(1924, 2)	N. B. M. Ex.

* The license of one of these applicants is being withheld pending completion of an internship.

Book Notices

A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology. By Torald Sollmann, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Fourth edition. Cloth. Price, $7.50. Pp. 1237. Philadelphia & London: W. B. Saunders Company, 1932.

It is doubtful whether any branch of medicine progresses faster than that which deals with current conceptions of the actions and uses of drugs. Those authors of accepted textbooks on pharmacology and therapeutics who really strive to keep abreast of the rapid advances find that not only corrected reprintings but thoroughly revised editions are frequently necessary. Probably no new revision on this subject is looked forward to with more anticipation than that of Sollmann's Manual of Pharmacology. In this edition, as in the three preceding editions, the general scheme is to present in ordinary type a fairly concise and connected story of the facts and explanations that deserve study for their direct bearing on medicinal practice or for a sound understanding of the subject; the many pharmacologic details and data that need to be consulted only on special occasions are relegated to the smaller type. This is a distinct convenience, particularly to the busy therapeutist. Since the third edition, a great many of the sections have been entirely rewritten. In the chapter on arsphenamine, the discussion of the fate of arsphenamine has been brought down to date. The work on barbitals and derivatives has been so prolific, especially in America, that it was to be expected that this subject would require extensive revision in any textbook on the subject. This Sollmann has done. Included is an informative table showing the composition of the more important barbitals in the order of their increasing toxicity and their therapeutic breadth based on hypodermic injection in rats. This is followed by an able discussion leading up to a critical definition of the rationale of the use of barbiturates in anesthesia. It is through such treatment as this that the book stands almost alone as an encyclopedia, based soundly on the literature and refined by the judgment of one who has spent many years in evaluating the armamentarium of drug therapy.

Other chapters or sections that have been rewritten or are newly included are those on bismuth; cinchophen toxicosis; gold; iodine compounds in roentgenography; liver extract; mercury; morphine addiction—fate—peristalsis; nitric vapors; pituitary; quinine and plasmoquin; sexual hormones; temperature regulation; thallium, and vitamins.

Approximately 1,100 pages of the manual is devoted to text. In the remaining 133 pages appear appendix A, a check list for the study of important preparations, appendix B, a tabulation of average doses, and appendix C, the excellent and particularly useful bibliography, which has been brought down to 1932 and occupies more than a hundred pages. Sollmann has so arranged the references in the text itself that the investigator or the casual student may find it easy to go to the original literature in order to become further acquainted with the work on which the author has based his assertion or his judgment. It has become axiomatic in American medicine that the estimation of drugs cannot be safely based on uncontrolled clinical observations or uncritical laboratory reports. Physicians who are abreast of the times appreciate the fact that all the scientific evidence concerning drugs—be it chemical, pharmacologic or clinical—is necessary for a true valuation of their status. Sollmann's Manual of Pharmacology is one source which the physician can consult for this purpose. It is a book that should be in the library of all progressive therapists.

Studien über die Veränderungen der Nachgeburt bei Lues. Von T. E. Oliin, früherem Assistenten der dermatologischen Klinik zu Helsingfors. Neue Folge. Band VI, Hefte 3-4, Separat-Abdruck aus Arbeiten aus dem Pathologischen Institut der Universität Helsingfors (Finland). Herausgegeben von Prof. Axel Wallgren. Paper. Pp. 377-542, with 20 illustrations. Jena: Gustav Fischer, 1931.

This monograph contains a detailed analysis of the changes that occur in placentas of syphilitic babies. The study is based on thirty-nine cases of syphilis observed by the author. The results indicate that the average weight of the placenta in syphilitic patients who give birth to full term babies is not greater than that in nonsyphilitic cases. In premature labors there seems to be an increase in weight of the placenta, though this is not definite. The increase in the ratio between the placenta and the fetus in syphilis is due to the frequency of premature labor and to the frequent occurrence of fetal death in utero. Histologically, aside from the occurrence of spirochetes, placentas in syphilitic patients do not show any changes that cannot be found in other placentas. However, these abnormalities are to be found much more commonly in syphilis than otherwise. Therefore, when a placenta shows at the same time typical hypertrophy of the villi, so-called miliary villous abscesses and inflammation of the umbilical cord, syphilis is almost certainly present. Spirochetes are not often found in the placenta, just as they are scarce in gummas in acquired syphilis. Antisyphilitic treatment during pregnancy prevents the development of these histologic changes to a marked degree.

The Story of Educational Philanthropy: Information for Attorneys, Trust Officers and Persons Interested in Philanthropy. Boards. Pp. 37, with 3 illustrations. Chicago: Northwestern University, Committee on Development, [n. d.].

This little brochure, after briefly recounting the growth of the university, emphasizes the permanent character of educational endowments. The history of universities has indeed shown, even through periods of religious, social and economic upheaval, that they are the most enduring of human activities. Methods of giving to Northwestern University are seductively set forth. The needs of the university are described in detail —for buildings and their maintenance, $58,000,000; for various educational purposes, from $17,000,000 to $42,000,000, a total of from 75 to 100 millions. It is encouraging, to say the least, to find that there are people who profess to believe that there still is so much money in the world.

Le cancer en Pologne. Par Stanislawa Adamowiczowa, Antoni Czyżewicz, Stefan Sterling-Okuniewski et Bronislaw Wejnert. Publications du Comité polonais pour la lutte contre le cancer. Série scientifique No. 7a. Paper. Pp. 64, with 17 illustrations. Varsovie: Comité polonais pour la lutte contre le cancer, 1930.

This pamphlet is a report of the Polish committee for the campaign against cancer. The first part discusses the attempts of the Polish committee to educate the public, create hospital facilities for the care of cancer patients, and conduct scientific research. It is of historical interest to note that as early as 1591 a hospital in Warsaw was set aside for the "putrefies," or "rotten," as patients suffering from cancer in those days were designated. At the close of the sixteenth century another hospital was built in Krolikarnia, near Warsaw, where until this day seventy women patients suffering from cancer are hospitalized each year. Not until 1929, however, were facilities made available for male cancer patients at the Hospital St.

Lazare. The first dispensary for the diagnosis and treatment of cancer was organized in 1917 at the Hospital St. Alexandre and supported by the municipality of Lodz, and in 1921 there was organized under the presidency of the minister of health the Polish committee for the campaign against cancer. This committee in 1924 appointed a committee under the name of "National Gift for Sklodowska Curie," and in 1925 erection was begun of an institute on grounds donated by the University of Warsaw.

The second part of the report discusses cancer statistics in Poland. The highest recorded mortality from cancer, 127 deaths per hundred thousand of population, was in Lwow. The lowest mortality, 59.8 per hundred thousand, was in Katowice. The cause of this marked difference it is impossible to explain.

Statistics of especial interest are those showing marked differences in cancer deaths in Jewish and non-Jewish women. In Warsaw between 1921 and 1927 there were 87.2 deaths per hundred thousand in non-Jewish and 75.6 in Jewish patients. This difference might conceivably fall within the limits of statistical error, but the difference becomes more marked when the comparison is restricted to deaths from cancer of the genital organs. There were only 7 deaths per hundred thousand in Jewish women, as compared with 26.1 in non-Jewish women, a difference of 19.1. The combined deaths from cancer of the breast, uterus and ovary showed only 14.4 deaths per hundred thousand in Jewish women, compared with 37.0 in non-Jewish women of the same community. These observations are entirely in accord with the now well known fact that Jewish women are relatively immune to carcinoma of the cervix, an extremely interesting and still unexplained fact. The report closes with a discussion of contributions to scientific researches on cancer by Polish investigators.

Influence of Social and Economic Factors on the Health of the School Child. By Raymond Franzen, Ph.D., Director of Research, School Health Study, American Child Health Association. Being number 4 of the School Health Research Monographs. Paper. Price, $1. Pp. 144. New York: American Child Health Association, 1932.

This is the fourth of a series of monographs in a school health study conducted by the American Child Health Association. This study had for its purpose the measurement of the results of the most important of the practices in school health work. This monograph deals with the effect of social and economic factors on the health of school children. There can be no question that socio-economic factors have a marked influence on nearly all the measures of health employed in schools. The quality of home care must of necessity influence habits, which in turn will affect diet and the condition of the teeth. As a result of this statistical study, it is concluded that the intellectual level and economic status play a large part in determining the amount and quality of dental care. The quality of home care also has a marked influence on the musculature and on the amount of subcutaneous tissue. The main purpose of this study was to attempt to derive measures of health after allowance had been made for differences due to socio-economic conditions, and formulas are derived which apparently achieve this purpose. These formulas are to be used in evaluating the procedures carried on in school health and thus to allow eventually the construction of an ideal program for building good health in school children.

Handbuch der Chemotherapie. Von Dr. Viktor Fischl, Abteilungsleiter der Schering-Kahlbaum A.-G., Berlin, und Prof. Dr. Hans Schlossberger, Mitglied des Reichsgesundheitsamtes Berlin-Dahlem. Teil 1: Metallfreie organische Verbindungen. Paper. Price, 34 marks. Pp. 357. Leipzig: Fischers medizinische Buchhandlung, 1932.

To the investigator in chemotherapy, a work such as this is an absolute necessity; to many others it will be a welcome source of information. It is, no doubt, because the study is so young—hardly more than 25 years old—that a complete reference work on chemotherapy has not as yet been available. The ambition of the authors, the one a chemist, the other a physician, to supply this need will be realized, if the present volume, the first part of the series, is to serve as a criterion. It treats the subject with typical German thoroughness. The second part is to include the metal derivatives, and the third will take up general questions. No doubt, all interested will look forward with anticipation to the publication of these other parts.

The Heart Rate. By Ernst P. Boas, M.D., Associate Physician, Mt. Sinai Hospital, New York City, and Ernst F. Goldschmidt, Ph.D. Cloth. Price, $3.50. Pp. 166, with 68 illustrations. Springfield, Illinois: Charles C. Thomas, 1932.

This well written monograph is based on continuous studies with the cardiotachometer, conducted on 356 persons over periods of from twelve to twenty-four hours. An interesting historical review of pulse mensuration introduces the work. This is followed by an intimate, lucid description of the cardiotachometer, the technic of cardiotachometry, the difficulties encountered in its use, and the means of obviating these. The normal heart rate during waking hours, the basal rate, the minimum rate, the range of normal heart rate, the rate during sleep, the effect of exercise, eating, body functions and mental and emotional activities on heart rate, the rate during various anesthetics and operations and the rate in organic and functional heart disease and in exophthalmic goiter are appropriately discussed and correlated with a review of the pertinent literature. Historical touches are included from time to time. Their observations give a more truly representative picture of the heart rate under various normal and abnormal conditions. Cardiotachometric studies during sleep appear to be of value in differentiating organic from functional heart disease and in determining the persistence of activity in instances of myocarditis. The book is a well organized, worthy contribution.

Hirn und Ohr: Kurze Darstellung der Hör- und Gleichgewichtsuntersuchung und ihrer Bedeutung für die Erkennung endokranieller Erkrankungen. Von Karl Grahe, Oberarzt der Universitäts-Ohren-Hals-Nasen-Klinik zu Frankfurt a. M. Mit einem Geleitwort von Professor O. Voss. Boards. Price, 9.60 marks. Pp. 108, with 60 illustrations. Leipzig: Georg Thieme, 1932.

As stated in the introduction, this monograph is not merely a compilation but represents much work and investigation by the author. A review of the anatomy of the ear is followed by functional testing of hearing. Grahe insists that the whisper be used so faintly that the normal individual with both ears closed can hear nothing. Unless this is done, one cannot be sure of the results of this test. There is next presented the examination of the vestibular apparatus. The author calls attention to the possible fallacies in the past-pointing reactions. The third chapter deals with functional disturbances in peripheral ear disease. Next there is a discussion of cochlear and vestibular changes in disease of central origin, such as involvement of the eighth nerve, the medulla and pons, the midbrain, the temporosphenoidal lobe, the cerebellum, the frontal lobe and general brain lesions. Each subdivision has a brief summary which greatly aids in the understanding of the subject. Pressure and vasomotor changes, syphilis, meningitis, encephalitis, epilepsy, chorea and hysteria are discussed. This little work is clearly written, is well illustrated, and is an excellent exposition of a most important subject, the relation of the ear to the brain.

A Text-Book of Psychiatry for Students and Practitioners. By D. K. Henderson, M.D., F.R.F.P.S., Physician-Superintendent, the Glasgow Royal Mental Hospital, and R. D. Gillespie, M.D., M.R.C.P., D.P.M., Physician for Psychological Medicine, Guy's Hospital, London. Third edition. Cloth. Price, $4.50. Pp. 595. New York: Oxford University Press, 1932.

This edition provides a new chapter on the psychiatry of childhood, in recognition of the growth in interest in child guidance in recent years. The authors have also attempted to give an outline of the laws governing mental disorder in the United States and in various continental countries. New information has been added to the chapter on epilepsy. The book represents the best features of English contributions to clinical medicine in that it provides not only well organized discussions of the various conditions concerned but also excellent reports of cases which make graphic the information provided.

Der Krebs, seine Entstehung und Erklärung: Eine biologische Studie. Von Dr. med. A. W. Kukowka, Strahlenarzt in Katowice. Boards. Price, 5 marks. Pp. 118. Vienna: Wilhelm Maudrich, 1932.

Here is another speculative discourse on the etiology of cancer. The concept is that cancer is the biologic sequel of a disturbance of the three regulative factors of cell life; namely, the intracellular life force, the lack or abnormality of the hormonal control, and the trophic vegetative innervation. No experimental evidence is presented.

Applied Physiology. By Samson Wright, M.D., M.R.C.P., Professor of Physiology, University of London, Middlesex Hospital Medical School. Fourth edition. Cloth. Price, $5.50. Pp. 552, with 128 illustrations. New York: Oxford University Press, 1931.

This edition brings the subject down to date. Careful elimination of obsolete material has permitted the addition of all that is new without materially increasing the size of the book. Special additions have been made on the vitamins, respiration and the glands of internal secretion—the fields of physiology which have had most attention in recent years. The present edition may be recommended as have those issued previously.

L'épreuve de la phénol-sulfone-phtaléine [P.S.P.] en chirurgie urinaire. Par Henry Blanc, chef de clinique urologique à la Faculté de médecine de Bordeaux. Préface de G. Marion. Paper. Price, 25 francs. Pp. 186, with illustrations. Paris: Masson & Cie, 1932.

This book is essentially a summation of the experiences of Marion and his pupils with the phenolsulphonphthalein test in genito-urinary surgery. The subject is considered in two parts: In the first part the experimental basis, technic, and factors influencing the elimination of the dye are considered, and in the second part the clinical application of the test is reviewed. Special emphasis is placed on the necessity of following the technic of the test carefully and regularly to insure comparable and accurate results. Blanc affirms his stand for the use of the dye intravenously. Although he does not advise its use to the exclusion of all other tests of renal function in genito-urinary surgery, it has been his experience that, in the hands of one who understands the technic, which is simple, the test is not only sensitive and reliable but valuable as well. From the standpoint of its reliability and value, it exceeds all other tests of renal function, particularly the determination of the urea content of the blood and the Ambard constant. The book will be of interest primarily to urologists, and although it contains nothing new, it satisfactorily epitomizes knowledge of the use of this test in urologic practice.

Social Changes in 1931. Edited by William F. Ogburn. Paper. Price, $1. Pp. 855-997. Chicago: University of Chicago Press, 1932.

This pamphlet, reprinted from the *American Journal of Sociology*, includes a number of essays which concern, of course, nearly every phase of American life. The chapter on medicine and the public health is written by Mr. Harry H. Moore of the Committee on Costs of Medical Care, and the one on the child by Grace Abbott of the Children's Bureau.

Kurzes Handbuch der Ophthalmologie. Herausgegeben von F. Schieck und A. Brückner. Band VII: Auge und Allgemeinleiden. Therapie. Hygiene. Bearbeitet von C. Baker, W. Comberg, und anderen. Paper. Price, 160 marks. Pp. 978, with 263 illustrations. Berlin: Julius Springer, 1932.

This is the sixth volume of the series that has been published and it deals with the eye and general disease, ocular therapy and ocular hygiene. The relationship of disease conditions of the eye and systemic disease is handled in chapters on diseases of metabolism by Lichtwitz of Berlin; diseases of the heart, vascular system and blood, by Kümmell of Hamburg; tuberculosis and syphilis by Igersheimer of Frankfort; infectious diseases, by Zade of Heidelberg; intoxications, by Sattler of Königsberg; diseases of the skin, by Lutz of Basel; exophthalmic goiter, by Zondek of Berlin; immunity and the eye, by Dold of Kiel and Schieck of Würzburg, and eye diseases of the tropics, by Bakker of Hilversum. All these chapters are of great value to the general practitioner for they deal with the possible ocular complications of general disease without going into the extreme technicalities of the ocular condition. They are of equal value to the ophthalmologist, for present-day knowledge of general disease as it may affect the eye is summed up in a comparatively short space (593 pages). Particularly excellent are the two chapters by Igersheimer on tuberculosis and syphilis. In the former, he emphasizes the value of tuberculin in ocular tuberculosis, without being fanatical. One of the most important phases of the chapter on syphilis is the discussion of the relationship of trauma to interstitial keratitis, a moot medicolegal point. Under the heading of the various intoxications as they may affect the eye is a valuable table showing the individual ocular complications of the commoner poisons. Immunity and the eye is first discussed in terms of A B C for the purpose of giving the initiated a firm although somewhat sketchy foundation before delving into the intricacies of the ocular immune processes. The chapter on the origin and action of the commonly used medicaments of eye therapeutics leaves something to be desired and might have been omitted. Chemotherapy, by Steidle of Würzburg, is better but is not comparable to the excellent chapter on physical therapy by Comberg of Berlin. Hygiene of the eye, ocular school hygiene, protection of the eye in industries, eugenics, and the frequency and cause of blindness are combined in a chapter of a hundred pages to close the volume. The bibliography is voluminous and is carried from the last edition of Graefe-Saemisch to date. The illustrations are uniformly good, but particularly excellent are the colored plates used in the chapter on diseases of the skin and the black and white photographs in the chapter on tropical diseases. The bookmaking is somewhat better than for the earlier volumes. On the whole, this volume maintains the same high standard of its predecessors and in addition to being the last word for the ophthalmologist forms a reference work of inestimable value for the general practitioner.

Hold Your Money! A Sucker's Handbook. Con Games Exposed. By Charles R. Hambly. Cloth. Price, $1. Pp. 109. Los Angeles: Monitor Publishing Company, 1932.

This volume attempts to reveal all sorts of con games and swindles in the investment field. It is not a significant book, nor is the material even well presented. However, the conclusion from its perusal is obvious: A sucker and his money are soon parted.

Maternity Handbook for Pregnant Mothers and Expectant Fathers. By the Maternity Center Association, New York City. Text Prepared by Anne A. Stevens. Cloth. Price, $1. Pp. 178, with illustrations. New York & London: G. P. Putnam's Sons, 1932.

This volume, issued under the direction of Dr. George W. Kosmak, provides in simple form instructions to prospective mothers. It concerns not only the care of the mother before the child is born but also the preparation for the baby, the after-care of mother and baby, and a chapter on training the child. The book is quite reliable and presented in such a form as to make it appeal particularly to the group it is planned to reach. The Maternity Center Association represents a combined medical and lay effort under local auspices which approaches the ideal in social work in this field.

Food and Your Body: Talks with Children. By Mary Pfaffmann, Health Educator, the Boston Dispensary, and Frances Stern, Chief of the Food Clinic, the Boston Dispensary. Cloth. Price, $2. Pp. 170, with illustrations. Boston: M. Barrows & Company, 1932.

Here is a series of talks in which children share, dealing with the basic food substances and their relationship to health and growth. The material is simple, including games and plays and correlated reading as well as excellent illustrations. The book is well adapted to its purpose and quite reliable.

Report of the Royal Commission on the Use of Radium and X-Rays in the Treatment of the Sick, etc. Printed by Order of the Legislative Assembly of Ontario, Sessional Paper No. 41, 1932. Paper. Pp. 171. Toronto: Herbert H. Ball, 1932.

This is a report to the legislative assembly of Ontario covering the use of radium, the whole question of cancer clinics, cancer research, and education of the public regarding cancer. The first four sections of the book concern investigations made in Canada, in the United States, in Great Britain and in European countries on these subjects. The second chapter deals with the prevalence of cancer, the third with its treatment, the fourth with research, the fifth with cancer education, and the sixth provides the conclusions. The appendixes deal with mortality from cancer, industrial cancer and the use of radium. As a result of this study, the commission urges the establishment of suitable centers for research and treatment in Ontario.

Prohibiting Minds and the Present Social and Economic Crisis. By Stewart Paton, M.D., Lecturer on Psychiatry, Johns Hopkins University. Cloth. Price, $2. Pp. 198. New York: Paul B. Hoeber, Inc., 1932.

This is a competent analysis of the emotional disorders that lead men to the desire to prohibit and to control the actions of others. The book is essentially an essay of ten or fifteen thousand words, well written, thought provoking and handsomely printed. It is a plea for less legislation and more sanity.

Medicolegal

Osteomyelitis Attributed to Extraction of Tooth

(Roberts v. Parker (Calif.), 8 P. (2d) 908)

Roberts, the plaintiff, had been suffering from toothache for a day or two. The gum surrounding the tooth was swollen, much inflamed, and extremely sore. He sought relief at the office of one E. R. Parker, otherwise known as Painless Parker. There a Dr. Baer examined the tooth and, without taking a roentgenogram to determine the cause of the inflammation and swelling, injected procaine with a hypodermic needle into the inflamed and swollen gum, in two places on each side of the jawbone, and extracted the tooth. The patient grew rapidly worse notwithstanding his visits from day to day to Parker's office. On the sixth day after the extraction he consulted other dentists and oral surgeons. They sent him to a hospital, where a diagnosis of osteomyelitis of the jawbone was made and he was operated on. At the expiration of a week, he was transferred to another hospital, where he remained for thirty-six days and was subjected to two more operations. In the end he recovered, but he had lost all sense of feeling in the region of the right lower jaw, and such teeth as remained on that side were loosened. He thereupon brought suit against Parker and another, and from a judgment in his favor, the defendants appealed to the district court of appeal, first district, division 1, California.

There was ample expert testimony, said the district court, to prove that inflammation, swelling and pain in the gums are definite symptoms of infection, and that where such conditions exist the dental profession considers it dangerous to inject an anesthetic into the gum with a needle and to extract a tooth, without first making a roentgenogram to determine the cause and extent of the infection and without first taking steps to reduce such infection as is present. The injection of a local anesthetic blindly at the base of an infected tooth is likely to scatter the infection, which, if carried into the blood stream, will produce osteomyelitis of the jaw bone. In view of the swollen, highly inflamed and extremely sore condition of the patient's gum in the vicinity of the aching tooth when he first visited the office of the dentist defendants, and of the serious effects that followed the removal of the tooth, the jury was justified in concluding as it did that the attending dentist did not exercise reasonable skill and diligence and that his failure so to do was the direct cause of the acute condition that followed the extraction. The dentist defendants contended, however, that regardless of their alleged failure to exercise reasonable skill and care, the injection of the anesthetic and the extraction of the tooth had nothing to do with the causation of the osteomyelitis. They claimed that the patient was doubtless afflicted with it, in either an active or a dormant form, at the time of his first visit to their office. But, said the court, even though it be assumed that the disease was present in dormant form when the tooth was extracted, that fact would not absolve the defendants of negligence, because admittedly the presence of the disease could have been readily and easily ascertained by the use of the roentgen ray; and if its presence had been so ascertained, the treatment of the disease, medically and surgically, both before and immediately after the tooth was extracted, according to expert testimony, would have been entirely different from that administered by the defendants. On behalf of the defendants, it was contended further that when there is osteomyelitis of the jawbone, extraction of teeth is an approved method of treatment, to bring about proper drainage. On this point, however, the evidence was conflicting, there being testimony to the effect that extraction under such conditions would be apt to aggravate the disease. There was a conflict of evidence, too, concerning the contention by the defendants that it is pathologically impossible to cause osteomyelitis of the jawbone by injecting a local anesthetic into the gums with a hypodermic needle; there was some testimony to the effect that, on account of the porousness of the jawbone, it is readily susceptible to infection from an infected tooth.

Commenting on the contention that there was a possibility that the osteomyelitis of the jawbone had developed from some cause other than the dentist defendants' failure to use reasonable precautions and ordinary care, the court pointed out that because of the subtleness of the origin and development of osteomyelitis it was not necessary that the evidence should demonstrate conclusively and beyond the possibility of a doubt that the injury of which the plaintiff complained was the result of negligence. If that were the rule, said the court, it would never be possible to recover in a case of negligence in the practice of a profession which is not an exact science. If in spite of testimony tending to show a different origin of a disease there is testimony to sustain an opposite conclusion which has been reached by the jury, the verdict of the jury must be sustained.

The judgment of the trial court in favor of the plaintiff was affirmed.

Dental Practice Acts: Aiding and Abetting an Unlicensed Practitioner.—The dental practice act of California authorizes the revocation of a dentist's license if he aids or abets an unlicensed person to practice dentistry unlawfully. A complaint was duly filed before the board of dental examiners of California, charging that a licensed dentist, Bley, "permitted one R. F. Morrison to have the use of a certain dental office . . . and to have the use of certain dental instruments and paraphernalia therein contained, for the purpose of practicing dentistry," and that by said acts Bley "aided and abetted the said R. F. Morrison, an unlicensed person, to practice dentistry unlawfully." Bley obtained from the superior court of San Joaquin County a writ of prohibition that prevented the board from proceeding under the complaint. The board thereupon appealed to the district court of appeal, third district, California. We think, said the appellate court, that the accusation is fatally defective in the following particulars: First, there is no allegation that Bley owned or had any control of the dental office or equipment referred to. Second, there is no allegation that Bley owned or had leased the building or premises wherein the dental offices and equipment were located. Third, there is no allegation that Bley knew or had any information that Morrison was an unlicensed dentist. The board of dental examiners contended that a complaint of unprofessional conduct is sufficient if it is in the language of the dental practice act, but nowhere in the statute, said the court, is to be found the word "permitted." If the word "permitted" had been left out and the accusation had charged that Bley had aided and abetted Morrison to practice dentistry unlawfully, then a violation of the dental practice act might have been stated. The board of dental examiners laid great stress on the fact that Bley did not object to the sufficiency of the complaint before the board. This contention was held to be without merit, however, since a complaint, in its statements of facts, must be sufficient to show unprofessional conduct or it will not give the board power or jurisdiction. The judgment of the superior court prohibiting the board from proceeding under the complaint was affirmed.—*Bley v. Board of Dental Examiners of State of California (Calif.), 7 P. (2d) 1053.*

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, November 2-4. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American Society for the Study of Disorders of Speech, St. Louis, November 25-26. Dr. Samuel D. Robbins, 419 Boylston Street, Boston, Secretary.

American Society of Tropical Medicine, Birmingham, Ala., November 16-18. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Association of American Medical Colleges, Philadelphia, November 14-16. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.

New York State Association of Public Health Laboratories, Albany, November 4. Miss M. B. Kirkbride, New Scotland Avenue, Albany, Secretary.

Porto Rico, Medical Association of, San Juan, December 9-11. Dr. P. Morales Otero, 12 O'Donell Street, San Juan, Secretary.

Radiological Society of North America, Atlantic City, November 28-December 2. Dr. Donald S. Childs, Medical Arts Building, Syracuse, New York, Secretary.

Southern Medical Association, Birmingham, Ala., November 16-18. Mr. C. P. Loranz, Empire Building, Birmingham, Secretary.

Southern Surgical Association, Miami, Fla., December 13-15. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.

Virginia, Medical Society of, Richmond, November 1-3. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Western Surgical Association, Madison, Wis., December 9-10. Dr. Frank R. Teachenor, 306 East Twelfth Street, Kansas City, Mo., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

16: 681-931 (July) 1932

*Cancer of Lung in Miners of Jáchymov (Joachimstal): Report of Cases Observed in 1929-1930. A. Pirchan, Jáchymov, Bohemia, and H. Šikl, Prague, Czechoslovakia.—p. 681.
*Differential Diagnosis of Primary Neoplasms of Mediastinum. C. D. Haagensen, New York.—p. 723.
*Cancer of Prostate: Study of Clinical Classification and Effects of Treatment by Irradiation. R. S. Ferguson, New York.—p. 783.
The Patient with Carcinoma of Stomach. U. Maes, New Orleans.—p. 815.
Chordoma Dorsalis of Cervical Spine. C. I. Owen, L. N. Hershey and Elisha S. Gurdjian, Detroit.—p. 830.
Law of Growth of Jensen's Rat Sarcoma. W. V. Mayneord, London, England.—p. 841.
Study of Effect of Thallium Acetate on Growth of Flexner-Jobling Tumor in Albino Rats. M. F. Engman, Jr., St. Louis.—p. 847.
Factors Affecting Calcium Content of Tissues of Carcinoma-Susceptible Rat. H. C. Pitts and Helen R. Johnson, Providence, R. I.—p. 854.
Eruptions of Corial Melanophores and General Cutaneous Melanosis in Goldfish (Carassius Auratus) Following Exposure to Roentgen Ray. G. M. Smith, New Haven, Conn.—p. 863.
Squamous-Cell Epithelioma of Thumb: Case Report. S. Rubenfeld, Portland, Ore.—p. 871.
Spheroidal-Cell Carcinoma (Seminoma) of Epididymis: Case. A. A. Eisenberg, I. Simons and H. Wallerstein, New York.—p. 875.
*Diffusely Infiltrative Carcinoma of Urinary Bladder. E. F. Hirsch and L. E. Schmidt, Chicago.—p. 882.
*Metastasizing Leiomyoma of Stomach. P. J. Melnick, Chicago.—p. 890.
Intrathoracic Sympatheticoblastoma: Report of Case. E. Scott and D. M. Palmer, Columbus, Ohio.—p. 903.
Impregnation of Glioma Sections from Paraffined Tissue with Hortega's Silver Carbonate (Lithium) Solution. E. F. Fincher, Jr., Atlanta, Ga.—p. 918.

Cancer of Lung in Miners.—Pirchan and Šikl report that by systematic clinical examination and by necropsies in particular it has been established that lung cancer is highly prevalent in Jáchymov miners. On thirteen of nineteen miners dying in 1929-1930, necropsy was performed; in nine of these pulmonary cancer was found (including one case of pleural cancer). Four were noncancerous. The anatomic form of the tumors showed no special features; most often a circumscribed form was found. With regard to metastases, the tumors showed various courses. In five cases there was generalization by way of the lymphatics as well as the blood stream. In two cases, metastases by the blood stream were almost exclusively present. The bones were involved in four cases. In three there was compressive myelitis due to metastases in the vertebrae. Metastases to the brain occurred in one case. Aside from the case of primary pleural carcinoma, microscopic examination showed oat-cell carcinoma five times and epidermoid carcinoma twice. In one case, two primary lung tumors of different structure were found, the one, fully developed, being oat-cell carcinoma, the other, quite small, epidermoid carcinoma. Both had caused separate metastases. The time spent in the mines amounted to from thirteen to twenty-three years in the cancerous cases. Only two of the men belonged to the active staff, the others having been out of work for a period of from one to twenty-seven years. The course of the disease was varied. In three cases there was a long history of specific symptoms (from six to nine years). In the remaining cases the course was much shorter, the shortest duration of manifest symptoms being ten weeks. It is highly probable that the tumors had developed for a considerable time before the first appearance of the symptoms, which, at times, were due to generalization. For this reason it was impossible to draw definite conclusions regarding the incubation of the tumors after the men had ceased work. This period in one case amounted apparently to twenty-seven years. This long interval was probably one of latency due to the slow development of the tumor rather than a true incubation period. Unlike the Schneeberg cases, no notable degree of anthracosis or silicosis was found in the lungs of miners submitted to necropsy (with the exception of one, who was noncancerous), so that no importance can be attached to this factor in the genesis of the tumors. Chemical analysis of lung tissue in one case gave a negative result as to arsenic, bismuth, cobalt, nickel and uranium; neither could radioactivity be proved. As the most probable cause of the tumors, radon, which is contained in the air of Jáchymov pits up to 50 mache units, might be considered. A cumulative effect of small quantities of emanation inhaled for a period of many years may be assumed. This question, however, requires further investigation.

Primary Neoplasms of Mediastinum.—Haagensen emphasizes the opportunity which primary mediastinal neoplasms present for correlation of clinical with pathologic observations. The various types of primary mediastinal neoplasms are reviewed and reports of nine cases are presented. The differential diagnosis of these neoplasms is discussed in relationship to the age of the patient, duration of the disease, clinical observations, roentgenographic observations, and reaction of the neoplasm to a test dose of radiation.

Cancer of Prostate.—Ferguson describes an original technic of interstitial irradiation in cancer of the prostate, providing greater accuracy in the placement of gold seeds. The bladder is opened under spinal anesthesia, and the trigon and bladder neck are inspected. Two fingers of the left hand are introduced into the rectum and the outline of the tumor palpated bimanually, the right hand being in the bladder. The seeding instrument is then introduced, the sound entering the urethra retrograde, dilating it slightly. The tip just engages the membranous urethra beyond the fixed puboprostatic ligament. The plate engages and is held firmly against the bladder neck by an assistant. The tumor will now be felt surrounding the sound and under the plate. Needles are now introduced through the cylinders of the plate which overlie the tumor. Their placement is determined by palpation, as they are pushed through the tumor. Each needle is inserted to just beyond the periphery of the portion of the tumor it pierces. Beginning with one needle, and proceeding with each in turn, the obturator is withdrawn. A gold seed of radon of the average value of 2 mc. is introduced into the needle with a loading device, and the seed pushed home with an obturator. This needle is then withdrawn a measured centimeter and a second seed deposited in the tumor. The process is repeated until the needle leaves the tumor at the bladder surface. The same procedure is carried out with each needle. When all have been used, the instrument is withdrawn and the bladder closed with suprapublic drainage. The tissue dose delivered by this technic will be found to equal or slightly exceed the required dose for the tumor, considered as a sphere of a given diameter, as outlined in the dosage table of Quimby and Martin. Dissection of six specimens in which this technic was used post mortem revealed a more accurate placement of the gold seeds than is possible by any previous manual technic. The most striking clinical feature has been the absence of pain and the marked reduction in residual urine.

Carcinoma of Urinary Bladder.—Hirsch and Schmidt call attention to the fact that the diffuse infiltrating type of carcinoma of the urinary bladder, of which they report a case, has an insidious clinical course. The usual bladder symptoms, especially hematuria, may be absent. The marked infiltration of the bladder wall and its thickening, the absence of a conspicuous tumor of the lining epithelium, and the contracted cavum are the principal anatomic features. The tumor cells in the case reported were small, and in regions where compression, necrosis, and deep penetration of the bladder wall had not masked the structure, the arrangement was papillary. This papillary form alines the infiltrative carcinomas of the urinary bladder with other papillary tumors of the urinary tract. Unless this papillary arrangement is recognized in the examination by the pathologist, the small size of the carcinoma cells and their diffuse infiltration of the bladder wall may lead to the histologic diagnosis of round-cell sarcoma or lymphosarcoma.

Metastasizing Leiomyoma of Stomach.—Melnick presents a review of the reported cases of myomas of the stomach and to these adds a case that he observed. The case was that

of an ulcerated leiomyoma of the stomach from which the patient bled to death. It was histologically benign, was composed of fully differentiated smooth muscle cells, and metastasized to the liver. The author gives a review of the subject of benign metastasizing tumors and a consideration of the present status of the histologic grading of tumors.

American Journal of Pathology, Boston

8: 367-476 (July) 1932

Experimental and Spontaneous Schwannomas (Peripheral Gliomas). P. Masson, Montreal, Canada.—p. 367.
*Id.: Part II. P. Masson, Montreal, Canada.—p. 389.
*Origin of Epithelium-Lined Blood Cyst (Chocolate Cysts) of Ovary from Graafian Follicle and Its Derivatives. E. S. J. King, Melbourne, Australia.—p. 417.
*Melitensis Meningo-Encephalitis: Mycotic Aneurysm Due to Brucella Melitensis Var. Porcine. G. H. Hansmann and J. R. Schenken, Iowa City.—p. 435.
*Instance of Adamantinoma of Jaw with Metastases to Right Lung. J. Vorzimer and D. Perla, New York.—p. 445.
Transient Pachymenia of Intima of Aorta, with Reference to Juvenile Arteriosclerosis. C. M. Torres, Toronto, Canada.—p. 455.

Experimental and Spontaneous Schwannomas.—Masson demonstrates that the fundamental element of encapsulated neurinomas is structurally identical with the syncytium of Schwann when that syncytium is undergoing autonomous proliferation, a proliferation that has been released by the disappearance of the neurites which normally inhabit it. The schwannian elements of a neurinoma proliferate within endoneurium, bounded by the old perineurium, now become the capsule, and not in the extraneural connective tissue. This proliferation within the endoneurium explains why the bundles and their palisades are as free from individual lamellar sheaths (perineuria) as are the aneuritic bundles resulting from transformation of degenerated fibers in the incised segment of a nerve and in nerve grafts. The palisaded nodules are not developmental accidents. They are organoid productions. Their histogenesis and structure are comparable to those of the schwannian supporting apparatus of the Wagner-Meissner tactile corpuscles. In the experimental schwannomas of the rabbit as well as in the spontaneous schwannomas of man, the collagenous framework of the schwannian bundles is determined by the schwannian syncytium and not by the endoneurial cells. The endoneurial cells occupy the framework secondarily. In reality, the collagenous framework of the bundles of regeneration and of schwannomas is not secreted; neither is it produced, either by mesodermal cells or by Schwann cells. It is determined by the Schwann cells just as basement membranes are determined by epithelium. In the light of these facts, it is probable that the classic conceptions of the mesodermal origin of the endoneurium should be revised.

Origin of Epithelium-Lined Blood Cysts.—King points out that, in the course of its development, the graafian follicle gives rise to a varied series of structures, the advanced stages of which bear little or no morphologic resemblance to the parent structure. A study of the intermediate stages is necessary for the demonstration of the relationship of the atypical forms to the original follicle. Hemorrhage occurs so frequently into these structures as to be almost a normal phenomenon. A heterotopic epithelial lining develops in the older cysts which contain blood. Since these older cysts, as stated, bear but little resemblance to the original follicles, the relationship has been overlooked. These cysts are identical with those which, on account of the nature of the epithelium, have been described as "endometrial."

Melitensis Meningo-Encephalitis. — Hansmann and Schenken report a case of melitensis meningo-encephalitis and review the related literature. A mycotic aneurysm due to Brucella melitensis var. porcine was the immediate cause of death. According to the literature and in the authors' case as well, isolation of the organism from the spinal fluid is relatively simple, if approximately 10 cc. of inoculum is used. Headache and evanescent paralyses are important central nervous system manifestations, and mononuclear pleocytosis is a prominent feature of the spinal fluid.

Adamantinoma of Jaw with Metastases to Lung.—Vorzimer and Perla report an instance of adamantinoma of the jaw with metastases to the lung. The bronchi of the lower lobe were markedly dilated and their lumens filled with a cast of the tumor tissue. In places the parenchyma of the lung was invaded. The authors suggest that the tumor tissue was aspirated into the lung from the primary tumor, by way of the trachea and bronchial tree, and grew primarily within the lumens of the bronchi. No similar metastatic lesion of an adamantinoma in the lung was found reported in the literature.

American Journal of Surgery, New York

17: 177-344 (Aug.) 1932

*Effect of Irradiation of Thymus on Artificial Fractures in White Rats. M. W. Mettenleiter, New York.—p. 177.
Retroperitoneal Approach in Subphrenic Abscess. C. W. Flynn, Dallas, Texas.—p. 183.
Gonorrheal Infection of Kidney Pelvis: Report of Four Cases. E. E. Kessler, Los Angeles.—p. 189.
Puerperal Gynecology: Including Gynoplastic Repairs of Old Lacerations, Primary Cystocele and Uterine Fixation at or Shortly After Childbirth. J. L. Bubis, Cleveland.—p. 194.
Intestinal Obstruction: Application of Some of the Newer Principles Evolved from Experimental and Clinical Experience. E. H. Mensing, Milwaukee.—p. 206.
Simplified Type of Roentgen Pelvimeter. G. E. Moore, Antigo, Wis., Mathematical Calculations by E. B. Skinner, Madison, Wis.—p. 216.
*Routine Method of Artificial Respiration for Surgical Clinic. W. W. Babcock, Philadelphia.—p. 221.
Clinical Significance of Form and Functions of Dorsal Roots in Spinal Anesthesia. A. I. Willinsky, Toronto, Canada.—p. 226.
Present Status of Management of Carcinoma of Breast. L. O. Baumgardner, Cleveland.—p. 233.
Primary Duplex Liver Carcinoma. H. Koster and L. P. Kasman, Brooklyn.—p. 237.
*Calcium Treatment of Pain in Cancer. R. J. Behan, Pittsburgh.—p. 242.
Vesicovaginal Fistulas Treated by Electrocoagulation. A. Peterson, Los Angeles.—p. 247.
Vaginal Ureterolithotomy. H. D. Furniss, New York.—p. 249.
New Method of Instituting Air Tight Pleural Drainage. A. S. W. Touroff, New York.—p. 254.
Bifurcation of Submaxillary Duct. B.-H. Rose, New York.—p. 257.
Biophysical Factors Concerned in Clinical Course of Carcinoma of Uterine Cervix. F. E. Neef, New York.—p. 259.
Open Communication Between Appendiceal Mucocele and Cecum. R. A. Lifvendahl and E. Ries, Chicago.—p. 270.
Intra-Abdominal Use of Epinephrine in Hypotension During Spinal Anesthesia. J. I. Perl, Chicago.—p. 275.
Detmold Method of Controlling Inoperable Hemorrhage: A Forgotten, but Occasionally Invaluable Procedure. J. F. Baldwin, Columbus, Ohio.—p. 279.
Lymphangioma of Rectum. A. J. Chisholm and P. Hillkowitz, Denver.—p. 281.
Attempted Suicide by Use of Gun and Cartridge of Different Caliber: Report of Case. J. R. Johnson, Chicago.—p. 283.

Thymus Irradiation.—Mettenleiter reports that from 10 to 25 per cent of a skin erythema dose of roentgen rays has a stimulating effect on the thymus of young and old rats. Artificial fractures show a quicker repair after irradiation of the thymus than those of control animals. The hyperactivity of the gland results in an increased affinity of the bones for calcium. Small doses of roentgen rays may be applied to the thymus in cases of delayed healing of fractures in human beings.

Artificial Respiration. — Babcock points out that, in the operative emergency, the surgeon usually resorts to the Silvester method, driving the anesthetist from the patient's head, as the patient's arms are moved violently up and down; thus a careful control of the jaws and tongue, the accurate observation of the air movements, and the convenient use of intravenous injection are prevented. Experience has convinced him that this is an undesirable method for use in the surgical clinic and, like the pulmotor, should pass into innocuous desuetude. For over twenty years he has used the following routine: If cessation of respiration is feared or occurs, the anesthetist affixes a delicate wisp of cotton by a bit of adhesive plaster or collodion to the tip of the patient's nose. This hangs in front of the patient's nose and mouth and is a positive indicator of spontaneous or induced air movements. The patient's arms are extended alongside his head. A large pad is placed in the abdominal wound to prevent the extrusion of intestine, and the abdomen and chest are covered by a sterile towel or sheet. If the cotton indicator remains motionless, the operator standing on the right side facing the patient's head, clasps his hands together over the manubrium of the patient, his elbows and forearm coapting the lateral thoracic walls. With pressure of the hands, forearms and elbows back, down and in, aided to some degree by the weight of his body, which is swung on the patient's chest, the operator produces expiration, at the same time watching the patient's face and noting the effect of his

pressure on the cotton indicator. The effect may be aided by pressure from the hands of an assistant placed under the operator's elbows. Inspiration, of course, results as the pressure is sharply released. The anesthetist maintains an open airway by keeping the mandible and tongue forward, notes the movement of the tidal air produced, watches the pupils and the carotid, temporal or radial pulse, and is prepared to administer carbon dioxide, oxygen or some other restorative. Nothing should be given by inhalation, however, until the operator has proved that he can produce adequate movements of air to and from the patient's lungs. The cotton indicator is invaluable in showing the efficiency of the operator.

Calcium Treatment of Pain in Cancer.—Behan notes the effective and surprising results which, in certain cases, calcium has had in reducing and, in some instances, completely alleviating the pain of those suffering with inoperable cancer. The patient's existence becomes more bearable, the mental state improves, and the fight against the disease is once more resumed. The growth of the cancer itself is frequently retarded and may be totally controlled. Even though the latter results are obtained only in a restricted number of cases, calcium still merits a high place in the therapy of cancer if it only relieves pain and renders the use of narcotics unnecessary. If, by using calcium, one can discontinue narcotics, the evil effect of their use as expressed in terms of lassitude, lack of appetite, retarded activities of the tissues of the body and generalized depression are avoided. The patient becomes active, has a healthy appearance, with high color and a good appetite, and a feeling of well being replaces the usual depressed attitude. The author has noted this beneficial reaction almost constantly and has seen it persist up to the death of the patient. He at first gave calcium in the form of the chloride and administered intravenously; later he gave the gluconate intravenously for those cases in which a rapid reaction was desired; intramuscularly if immediate results were not so urgent. In addition to the administration of calcium, intravenously and intramuscularly (the action of which is more or less evanescent), it was also necessary to provide a constant source of calcium supply. This was best accomplished by giving large doses of calcium by mouth, so that on absorption from the intestinal tract the body fluids were constantly oversaturated; to induce this condition the patient was given at least 2 Gm. of calcium gluconate orally, three times a day.

Archives of Surgery, Chicago

25: 257-432 (Aug.) 1932

*Pulmonary Abscess. J. L. Yates, Milwaukee.—p. 257.
*Transperitoneal Seminal Vesiculectomy. S. F. Wilhelm, New York.—p. 273.
*Congenital Malformations of Hands. A. B. Kanavel, Chicago.—p. 282.
Tumors of Small Intestine. T. S. Raiford, Baltimore.—p. 321.
*Sudden Decompression of Chronically Distended Urinary Bladder: Clinical and Pathologic Study. C. D. Creevy, Minneapolis.—p. 356.
*Improved Thyroidectomy Technic, with Especial Reference to Consideration of Results of Eliminating Drainage in Series of Twelve Hundred Cases. J. L. DeCourcy, Cincinnati.—p. 386.
Gastric Acidity, with Especial Reference to Pars Pylorica and Pyloric Mucosa: Experimental Study. J. T. Priestley and F. C. Mann, Rochester, Minn.—p. 395.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; L. D. Keyser, Roanoke, Va.; Jean Verbrugge, Antwerp, Belgium; A. A. Kutzmann, Los Angeles; A. B. Hepler, Seattle, and R. Gutierrez, New York.—p. 404.

Pulmonary Abscess.—Yates states that the pathogenesis of remediable forms of pulmonary abscess that develop in the lungs of human beings and also effective methods for prevention and treatment are established by recognizing the pulmonary structure and function peculiar to man and to other animals with thick pleurae. The most efficacious means to prevent abscesses are: the employment of local anesthesia in the performance of operations on the mouth and accessory sinuses, notably the removal of tonsils and adenoids, except in children; the utilization of such surgical technic as will minimize postoperative phlebitis; earlier introduction of operative adjuncts in the treatment for pulmonary tuberculosis, and the prompt bronchoscopic removal of aspirated foreign bodies. Treatment for pulmonary abscess, particularly for the more severe gangrenous form, will be more efficacious, especially in the restoration of external respiration, if appropriate measures that will promote adequate drainage are utilized as soon as posture alone is found to be inadequate.

Transperitoneal Seminal Vesiculectomy. — Wilhelm reports a case of colon bacillus abscess of both seminal vesicles in which the diagnosis was made preoperatively by rectal examination and seminal vesiculography. The symptoms and signs were those of absorption from a low grade suppurative focus; that is, a subfebrile course, asthenia, anemia, myalgias and arthritis pains. The abscess of the seminal vesicles was removed by what the author believes to be a heretofore undescribed surgical procedure, transperitoneal seminal vesiculectomy. He points out that transperitoneal seminal vesiculectomy offers excellent surgical exposure of both seminal vesicles, permitting their complete enucleation under vision.

Congenital Malformations of Hands.—A critical analysis of cases with congenital malformations of the hands leads Kanavel to eliminate amniotic bands, reversion to type and all other suggested etiologic factors except impairment of the germinal cells as the activating source of these malformations. A study of the embryology and its correlation with clinical cases leads him to classify the lesions in simple anatomic groups and to eliminate the classifications based on individual clinical cases. This simple classification is shown to comprise all cases and make their origin, nature and relationship understandable. Briefly, one may say: Congenital malformations of the hand are due to varying degrees of growth impairment having origin in the germ plasm. Moderate growth impairment ends in tissue disorientation. Severe growth impairment ends in aplasia and hypoplasia. Either type may involve the whole extremity or any embryologic subdivision. Anatomically, these types may involve: (1) the upper part of the arm or whole arm, (2) the radial bud and its radicle in whole or in part and (3) the ulnar bud and its radicles in whole or in part. Technical procedures that have been found advantageous in the treatment for aplasias, syndactylism and other malformations are presented by the author with illustrative cases.

Sudden Decompression of Chronically Distended Urinary Bladder.—According to Creevy, it is an accepted theory that the sudden removal of residual urine that has been present for any considerable period in prostatic hypertrophy is dangerous. The presence of partial urinary retention leads to an increased tension in the bladder. This in turn causes an increase in the pressure in the kidney pelves, which leads to hydronephrotic atrophy. The presence of urinary retention has been shown experimentally to be a potent factor in increasing the susceptibility of the urinary tract to infection. Mechanical trauma (catheter) has been shown to have a similar influence. It has been suggested that the sudden withdrawal of residual urine reduces the pressure in the urinary tract and so leads to congestion, hematuria and interference with the kidney function with urinary suppression apart from any infectious process. Acute pyelonephritis and its complications are capable of producing all the phenomena seen after sudden emptying of the distended bladder. Sixty-eight of sixty-nine patients dying after catheterization and studied by the author showed lesions of an infectious character in the kidneys. Eighty and two-tenths per cent of these patients manifested clinical uremia before death. Sudden death occurred four times; it was due twice to pulmonary embolism and once to coronary thrombosis. No lesions that were attributed to sudden emptying of the bladder without infection could be found. Infection could be assigned as the cause of death in all but one of the patients. From his observations the author concludes that many patients with chronic incomplete retention of the urine undoubtedly die as a direct result of catheterization. That death may result solely from the mechanical effect of this sudden emptying of the bladder has been claimed repeatedly but has not been proved. Patients who die as a result of catheterization die of infection in the majority of instances. Whether there is any connection between the rate at which the bladder is emptied and the fatal issue (infection) is a moot point. It seems more likely that the mere introduction of infection into a urinary tract prepared by long-standing obstruction (and quite independent of the rate at which the bladder is emptied) is the exciting cause of the fatal issue. The value of gradual emptying of the chronically distended bladder is therefore open to question, although the complete abandonment of this procedure is perhaps not justified.

Improved Thyroidectomy Technic.—In a series of 1,200 thyroidectomies in the past three years, DeCourcy has employed preoperative preparation with iodine. His usual technic consists of bilateral subtotal excision. His procedures have made drainage necessary in only approximately 1 per cent of cases. It is his observation that drainage is usually unnecessary and even harmful.

Florida Medical Association Journal, Jacksonville

18: 551-592 (June) 1932

Proposed Compensation Act and Its Relation to Physician. S. E. Driskell, Jacksonville.—p. 559.
Modern Treatment of Thyrotoxicosis. S. A. Folsom, Orlando.—p. 561.
Preadolescent Torsion of Uterine Adnexa: Report of Case. W. C. Payne, Pensacola.—p. 567.
Cholecystitis in Adolescent: Case Report. S. W. Fleming, West Palm Beach.—p. 569.
Ruptured (Rarer Type) Ectopic Gestation: Review of Literature and Case Report. Carol C. Webb, Pensacola.—p. 570.
Football Injuries. G. C. Tillman, Gainesville.—p. 571.

Illinois Medical Journal, Chicago

62: 97-196 (Aug.) 1932

Newer Clinical Concepts of Blood. J. W. Sours, Peoria.—p. 109.
Use of Bichloracetic Acid in Surgery. E. H. Ochsner, Chicago.—p. 115.
Cost of Medical Education: Its Relation to Cost of Medical Care. I. H. Neece, Decatur.—p. 118.
Manipulation of Stiff Shoulder. J. D. Ellis, Chicago.—p. 121.
New Phases in Pediatric Medicine. C. G. Grulee, Chicago.—p. 130.
Legislation in Interest of Veterans. H. H. Shoulders, Nashville, Tenn. —p. 136.
Urinary Antisepsis: Introduction of New Product for Oral Use. D. F. Rudnick, Chicago.—p. 144.
Phrenico-Exeresis in Treatment of Pulmonary Tuberculosis. O. C. Schlack and J. R. Head, Chicago.—p. 151.
Schilling Count as Aid in General Surgery. H. P. Miller, Rock Island. —p. 156.
Retropharyngeal Abscess. P. J. Sarma, Chicago.—p. 161.
Prostatic Massage: Facts and Fallacies. L. M. Beilin, Chicago.—p. 164.
Traumatic Rupture of Spleen. M. S. Mazel, Chicago.—p. 170.
Goiter in Pregnancy. L. E. Day, Chicago.—p. 173.
Consideration of Ureteral Calculi. B. E. Fillis, Hubbard Woods.— p. 175.
Relation of Rectum to Management of Colon Diseases. C. E. Pope, Evanston.—p. 178.
Childhood or Juvenile Type of Tuberculosis. J. Ritter, Miami, Fla.— p. 185.

Iowa State Medical Society Journal, Des Moines

22: 295-382 (July) 1932

A Medical Clinic. H. L. Ulrich, Minneapolis.—p. 295.
Treatment of Fissure in Ano. C. J. Drueck, Chicago.—p. 302.
Heart Sounds and Their Clinical Significance. E. E. Kottke, Des Moines.—p. 305.
Prenatal Care. L. O. Hoffman, Omaha.—p. 309.
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Journal of Biological Chemistry, Baltimore

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*Study of Milk, Blood and Excreta of Cows Fed Moderate and Excessive Amounts of Irradiated Yeast or Ergosterol. A. F. Hess, R. F. Light, C. N. Frey and J. Gross, New York.—p. 369.
Contribution to Chemistry of Lactobacillus Acidophilus: I. Occurrence of Free, Optically Active, Dihydroxystearic Acid in Fat Extracted from Lactobacillus Acidophilus. J. A. Crowder and R. J. Anderson, New Haven, Conn.—p. 393.
Antineuritic Vitamin: III. Removal of Impurities by Fractional Precipitation. R. J. Block and G. R. Cowgill, New Haven, Conn.—p. 421.
*Acid-Base Balance in Sweat. Ella H. Fishberg and W. Bierman, New York.—p. 433.
Protection of Insulin by Antiproteases, and Its Absorption from Intestine. B. K. Harned and T. P. Nash, Jr., Memphis, Tenn.—p. 443.
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Effect of Phlorhizin on Rate of Absorption from Gastro-Intestinal Tract of White Rat. R. H. Wilson, New Haven, Conn.—p. 497.
Phosphorus Partition in Blood of Rachitic and Nonrachitic Calves. F. J. Stare and C. A. Elvehjem, Madison, Wis.—p. 511.
Animal Calorimetry: Respiratory Metabolism of Exercise and Recovery in Depancreatized Dogs: Forty-Second Paper. W. H. Chambers, Margaret A. Kennard, H. Pollack and Margaret Dann, with technical assistance of J. Evenden, New York.—p. 525.
Muscle Creatine in Nutritional Muscular Dystrophy of Rabbit. Marianne Goettsch and Elizabeth F. Brown, New York.—p. 549.
*Studies in Gastric Secretion: IV. Variations in Chlorine Content of Gastric Juice and Their Significance. F. Hollander, New York.— p. 585.

Destruction of Cholesterol by Animal Organism.—Page and Menschick carried out complete balance experiments with rabbits fed on large amounts of cholesterol. It could be shown that destruction of cholesterol of from 0.8 to 1.8 Gm. a week occurred. Administered cholesterol is deposited throughout the body except in the brain. There appears to be an equilibrium established between the content of sterol in the organs, in the excreta, and probably in the food.

Irradiated Yeast and Viosterol.—Hess and his associates report that the milk of cows which received about 300 Gm. (60,000 units) of irradiated yeast daily is highly antirachitic and prevents or cures rickets in infants. In spite of the high concentration of vitamin B_1 in the yeast, the titer of this vitamin in the milk was not increased. No increase in the phosphorus, calcium or ash was found, nor was there an increase in the inorganic phosphorus or calcium content of the serum. When excessive, nontherapeutic, amounts of viosterol were fed, a slight but definite rise in the calcium, phosphorus and ash content of the milk resulted; these increases were less in the milk of cows which secreted a large volume of milk daily. There was also a rise in the concentration of calcium in the serum and, especially, of phosphorus. When excessive quantities of irradiated yeast were fed, the blood contained approximately 1 unit of vitamin D for each 1.5 Gm.; the same amount was found in the blood of cows which had received about three times as much viosterol. Assays of the excreta of the cows receiving 300 Gm. of irradiated yeast daily showed that about 25 per cent of the vitamin D ingested was eliminated by way of the intestine. No vitamin D was recovered from the urine. Histologic examination of various organs of the cows that had received excessive amounts of viosterol for long periods failed to show any lesions of the cellular structure or of the blood vessels. Analyses of the ash of the bones showed the percentages to be within normal limits. Investigation as to what extent the total milk production of the cow and the percentage of butter fat in the milk affect the concentration of vitamin D in the milk showed that the lower the total production of butter fat the higher will be the concentration of the vitamin in the fat and, furthermore, that the greater the daily production the greater will be the total number of vitamin D units excreted in the milk a day, although the units a quart may be lower.

Acid-Base Balance in Sweat.—Fishberg and Bierman made a study of the acid-base equilibrium in patients whose temperatures were raised to approximately 41 C. and whose loss of fluid practically equaled the entire blood volume. The base economy factor of the skin was found in the ability to excrete the sweat at a much lower p_H than the blood plasma. Also the excretion of lactic acid and lactates resulted in the sparing of fixed base because of the proportion of lactic acid passing out un-ionized. The presence of lactic acid and lactates acted as a buffer to prevent the lowering of the p_H to below 4, with consequent damage to the skin. From their observations the authors conclude that the lactic acid produced at high temperatures and by exercise may possibly be the actual stimulus for initiating the function of the sweat glands.

Studies in Gastric Secretion.—Hollander presents data that confirm the existence of a qualitative parallelism of the curves obtained by plotting the acidity and total chloride concentrations for pure gastric juice against the time. However, when the total chloride concentration and the acidity are plotted against each other, with the exclusion of time as a factor, the resulting graph is a straight line. This simple mathematical relation between the two variables was demonstrated with data from a variety of sources. Similarly, a straight line relation was shown to exist between the neutral chloride concentration and the acidity. The author formulated a detailed hypothesis to account for these quantitative variations in total and neutral chloride concentrations, and also for the different types of acidity-time curves previously reported. This hypothesis assumes that pure gastric juice is a mixture of the parietal secretion with an alkaline fluid which is principally mucous secretion. The parietal secretion is essentially an isotonic solution of hydrochloric acid and contains no fixed base. The alkaline component is an isotonic solution the principal con-

stituents of which are neutral chlorides and bicarbonates, the concentration of the former being appreciably greater than that of the latter.

Journal of Infectious Diseases, Chicago

51: 1-190 (July-Aug.) 1932

*Primitive or Filtrable Forms of Bacteria and Their Occurrence in Aseptic Milk. H. J. Brueckner and J. M. Sherman, Ithaca, N. Y.—p. 1.
*Relationship of Bacteriophage to Natural and Experimental Diseases of Laboratory Animals, with Especial Reference to Lymphadenitis of Guinea-Pigs. M. G. Colvin, New Haven, Conn.—p. 17.
Inheritance of Resistance and Susceptibility to Infectious Abortion. M. Manresa, Laguna, P. I.—p. 30.
Metabolism Studies on Brucella Group: IV. Bacteriostatic Action of Dyes. K. F. Meyer and C. E. Zobell, San Francisco.—p. 72.
Id.: V. Production of Hydrogen Sulphide. C. E. Zobell and K. F. Meyer, San Francisco.—p. 91.
Id.: VI. Nitrate and Nitrite Reduction. C. E. Zobell and K. F. Meyer, San Francisco.—p. 99.
Id.: VII. Dextrose Utilization. C. E. Zobell and K. F. Meyer, San Francisco.—p. 109.
New Studies on Filtrability of Pure Cultures of Tubercle Group of Micro-Organisms. R. R. Mellon and L. W. Fisher, Pittsburgh.—p. 117.
*Source of Thermophilic Bacteria Causing Spoilage in Canned Asparagus. C. T. Townsend, San Francisco.—p. 129.
*Endemic Typhus Fever of United States. R. E. Dyer, E. T. Ceder, A. Rumreich and L. F. Badger, Washington, D. C.—p. 137.
Agglutination Test in Diagnosis of Infectious Abortion in Cattle (Bang's Disease). C. R. Donham and C. P. Fitch, St. Paul.—p. 162.

Filtrable Forms of Bacteria in Aseptic Milk.—Brueckner and Sherman describe experiments in which they demonstrated that primitive forms of bacteria were present in the aseptically drawn milk of a majority of healthy cows they studied. The method used for the detection and quantitative estimation of these types of micro-organisms was to make serial dilutions of the milk in dextrose beef infusion broth and to incubate the dilution cultures for one day at 37 C. and then at 30 C. for about two weeks. After incubation, the broth cultures from the higher dilutions, which showed no growth of ordinary bacteria, were seeded on the surface of dextrose beef infusion agar. After incubation at 37 C. for two days, the plates were examined microscopically for the presence of definite, minute colonies. Positive growths were verified by the finding of definite bacterial cells in stained preparations. The results reported, as well as other work done in the authors' laboratory, indicate that the primitive forms of bacteria may sometimes occur in numbers approximating a trillion (10^{12}) per gram of substance. The morphologic types observed were cocci and small rods. While the life cycle theory of previous investigators is a plausible and attractive explanation of the results obtained, the work reported by the authors does not answer the question of whether these organisms are definite species or represent only a dissociative form or cyclostage in the development of ordinary bacteria.

Bacteriophage Therapy.—From a review of the results of bacteriophage therapy in natural and experimental diseases of laboratory animals, Colvin concludes that there have been no real therapeutic successes since the early experiments of d'Herelle with fowl typhoid. Attempts to adapt bacteriophage to acting in serum were partially successful but did not give it therapeutic value. Streptococcic lymphadenitis of guinea-pigs is described. A bacteriophage of maximum virulence against the etiologic organism was used in attempts to modify the course of the disease, with little or no success. Treatment of the streptococcic lymphadenitis of guinea-pigs by bacteriophage revealed no curative value and some evidence that such therapy is not entirely harmless. It was observed that a degree of immunity existed after recovery from the abscesses of streptococcic lymphadenitis of guinea-pigs. It would appear that within the tissues the conditions are such as to inhibit the action of a bacteriophage that is thoroughly effective in vitro.

Source of Thermophilic Bacteria Causing Spoilage in Canned Asparagus.—Townsend reports observations which indicate that thermophilic spoilage in canned asparagus is due to contamination of the asparagus with resistant spores from the soil. All-green asparagus from contaminated soil appears to be fully as liable to spoilage as the white and the natural green. The resistance to heat of the organisms causing spoilage is such that, even though only a small amount of asparagus contaminated with them becomes mixed with that from non-contaminated areas, considerable spoilage may result throughout the pack. The hazard of spoilage may be reduced, but not eliminated, by thorough washing of the asparagus promptly after harvesting. Only certain parts of each area studied were found to be contaminated. The contamination of peat soil with spores of the thermophilic organisms causing spoilage appears to decrease with the depth, as indicated by tests in which samples of soil taken at different depths were inoculated into canned asparagus. Areas contaminated with spores of resistant thermophilic bacteria can be delineated with a fair degree of accuracy by soil-inoculated experimental packs.

Endemic Typhus Fever.—According to Dyer and his associates, the rat flea (Xenopsylla cheopis) as a vector of endemic typhus meets the requirements of the epidemiologic evidence. The virus of endemic typhus has been recovered repeatedly from rat fleas taken at typhus foci, and finally experimental transmission of the virus from rat to rat by means of rat fleas has been carried out in the laboratory. The foregoing evidence points to the rat flea as a common vector of endemic typhus from rat to rat and from rat to man. The possibility must be borne in mind that rodents may be an important reservoir of typhus in parts of the world where epidemics of typhus occur, and it seems a reasonable hypothesis that epidemics of louse-borne typhus may have their origin from typhus transmitted from rat to man by rat fleas.

Journal of Pediatrics, St. Louis

1: 1-144 (July) 1932

The American Academy of Pediatrics, Why and What For. J. L. Morse, Boston.—p. 1.
*Postanginal Sepsis. I. A. Abt, Chicago.—p. 8.
*Care of Premature Infants. M. W. Poole and T. B. Cooley, Detroit.—p. 16.
A Trial of Toxin-Antitoxin Floccules (T A F) in Immunity Against Diphtheria. H. K. Faber and Mary I. Preston, San Francisco.—p. 34.
Pediatrics and Supervision of Child Development. A. Gesell, New Haven. Conn.—p. 38.
*Undulant Fever in Childhood. H. Dietrich and C. W. Bonynge, Los Angeles.—p. 46.
*Paranasal Sinuses in Scarlet Fever. A. C. Silverman, Syracuse, N. Y.—p. 58.
*Effect of Vitamin D in Increasing Resistance to Infection. Elizabeth Chant Robertson and J. R. Ross, Toronto, Canada.—p. 69.
*Effectiveness of Methenamine as a Urinary Antiseptic at Various Hydrogen Ion Concentrations. H. F. Helmholz, Rochester, Minn.—p. 73.
Aneurysm of External Iliac Artery and Gangrene of Leg as Complications of Bacterial Endocarditis. J. B. Bilderback, Portland, Ore.—p. 82.
*An Aid in Diagnosis of Certain Type of Congenital Esophageal Stenosis. M. R. Reid, Cincinnati.—p. 87.
Antiques of Pediatric Interest. T. G. H. Drake, Toronto, Canada.—p. 91.

Postanginal Sepsis.—Abt states that postanginal sepsis usually follows a tonsillar infection or may be preceded by a pharyngeal phlegmon, an intratonsillar abscess. There are a few cases in which the sepsis occurred during an attack of scarlet fever or after a tonsillectomy in which severe infections followed. As a rule the focus from which sepsis develops is the retrotonsillar phlegmon. Whether a bacteremia or pyemia develops depends on various factors difficult to determine. The majority of cases heretofore reported have occurred in young healthy persons. The greatest incidence is between 20 and 30 years. Localization on the left side seems to be more frequent than on the right. The pyemia may develop shortly after the primary focal infection or the symptoms of sepsis may be deferred as long as four weeks after the primary disease, though an analysis of all the cases shows that the average length of time that elapses is from ten to fourteen days after the original infection. This constitutes a latent period, during which the patient seems comparatively well. The occurrence of chills is of great importance, especially if they are observed after the angina has subsided. The occurrence of a chill indicates that organisms are gaining access to the circulation and that the inflammatory process is no longer localized or walled off. Remittent fever may be associated with chills. In the severest forms of the disease a continuous high fever may be present without chills, extensive metastasis may occur, and death results after a short period. The patients present the general symptoms usual to a septic infection, such as pallor, subicteric hue, dry tongue, rapid pulse and rapid respiration, malaise, prostration and somnolence. The most serious and most fre-

quent complication is the formation of metastatic foci in the lungs. Periarticular abscesses or septic arthritis are not infrequent. Abscesses in muscles and liver, suppurative kidney processes, and cavernous sinus infection, with the production of ocular symptoms, and purulent meningitis have been observed. Paralysis of the hypoglossal nerve and the recurrent laryngeal nerve may result from abscess formation in the parapharyngeal space. The prognosis in postanginal sepsis is grave. The treatment is for the most part surgical. If the septic focus can be located, it should be drained. In general, it may be said that the earlier the purulent focus is detected and the contents evacuated, the more favorable the prognosis. Prompt surgical procedure, whether it be evacuating an abscess or ligating the jugular vein, will diminish the hazard of the disease and lower the mortality. Unfortunately, the area of infection usually lies deeply embedded and is difficult of access. In some instances, abscesses in or about the tonsils may be incised. The tonsillar veins are sometimes filled with infected thrombi, and Zange advises that all these small veins be ligated. The parapharyngeal space may be the site of infection, and drainage of this area may cause the greatest difficulty and requires unusual technical skill. When symptoms of general sepsis are present, as evidenced by chill and irregular fever, the jugular vein on the affected side should be ligated as early as possible, in order to prevent the formation of metastatic foci through the various tissues and organs of the body. All writers on the subject agree that early ligation of the jugular vein is the only logical treatment when the diagnosis of septic thrombophlebitis has been established.

Care of Premature Infants.—Poole and Cooley call attention to the fact that the supervised care of premature infants in their own homes has proved highly satisfactory. The mortality in the posthospital period has been reduced by this method. The period of hospitalization has been shortened, with consequent reduction of cost. Rickets can be prevented in premature infants by small doses of cod liver oil (supplemented by ultraviolet irradiation) if started early. Breast milk with added calcium caseinate has been found the most satisfactory feeding for infants under 1,400 Gm. in weight. Infants over this weight thrive well when a diluted unsweetened evaporated milk formula, with added carbohydrate, is gradually and carefully substituted for the modified breast milk. Nonacidified evaporated milk has been found satisfactory for the larger premature infants and during the period of after-care in the homes. Gastro-intestinal upsets were of infrequent occurrence in infants who were not suffering from infection.

Undulant Fever in Childhood.—Dietrich and Bonynge report five cases of undulant fever in children. These children all consumed more or less raw milk and, as far as could be determined, contact infection was excluded. The complaint of feeling tired and weak was present in all children over 1 year of age. Sweats, when they occurred, were drenching in character and generally came on at night or when the child was asleep. Flushing of the face and a sense of heat were usually complained of in the afternoon. The health of these children since recovery has been good. It is of interest that now, three years after the onset, agglutination tests in all the children are negative, the complement-fixation test, however, being positive in one instance. The spleen, when enlarged, felt rather firm. Tenderness was not particularly in evidence. Hyperesthesia was observed in one instance and was quite extreme, almost such as one sees in a beginning case of poliomyelitis. The authors point out that the apparent low incidence of the disease in infancy and early childhood allows one to state that undulant fever, at present, does not constitute a major health problem in early childhood.

Paranasal Sinuses.—Silverman reports the results of roentgen examination of the paranasal sinuses of 300 cases of scarlet fever. In this series, 91 per cent of the patients showed shadows designated as hazy to opaque, and only 9 per cent were reported clear. The sinus conditions as shown by roentgen examination were related to age, season, time since onset, length of isolation period, types of disease and other clinical and epidemiologic aspects. Without desiring to draw unwarranted conclusions in the absence of control studies, the author raises the question whether sinus involvement in scarlet fever is not the rule rather than a complication.

Effect of Vitamin D in Increasing Resistance to Infection.—Robertson and Ross point out that it is well recognized clinically that rachitic infants are especially prone to develop respiratory infections, but it is often presumed that these have a local origin, i. e., that they are due to the marked deformity of the chest, and that the general resistance of the child is not decreased. Few investigations have been undertaken to discover whether the resistance of rachitic animals is any lower than that of controls which were given vitamin D in addition to the diet. The authors describe experiments in which they demonstrated that the addition of vitamin D, in the form of vitamin D bread, to a rachitogenic diet, which already contained considerable amounts of the other vitamins, raised resistance of rats to a "rat typhoid" infection which was fed by mouth.

Methenamine as Urinary Antiseptic.—Helmholz emphasizes the fact that in the treatment of urinary infections with methenamine a great variety of results have been reported. Many observers have reported failures. His early experience with the drug is possibly not unlike the experiences of many of these observers. In a publication in 1918 on the treatment of pyelitis, he stated that methenamine was of practically no value in the treatment of pyelitis. The way in which methenamine is used even at the present time invites failure. With better appreciation of the conditions necessary to insure efficient action, methenamine has proved, in his experience, the best urinary antiseptic at present in use. Methenamine as such has no bactericidal power. Bacteria will multiply rapidly in culture mediums containing methenamine in high concentration. The effectiveness of methenamine is dependent on the splitting off of formaldehyde in an acid medium. The amount of formaldehyde is dependent on the concentration of methenamine, the acidity of the medium, and the time for action. These important factors have not been sufficiently emphasized in the use of methenamine, particularly in relationship to the degree of acidity of the urine. The author reports a series of experiments in which he found that, at a p_H of 6.0, urine with a 0.5 per cent concentration of methenamine rarely sterilizes itself at the end of twenty-four hours. At a p_H of 5.0, urine with a 0.5 per cent concentration of methenamine can be sterile after four hours at 37 C. Treatment with methenamine, without constant control of the p_H of the urine, is liable to be unsuccessful.

Congenital Esophageal Stenosis.—Reid states that in congenital atresia of the esophagus it is known that the lower esophagus not infrequently communicates with the trachea or a bronchus. When the roentgenogram shows the stomach to be distended with air, this developmental anomaly may reasonably be suspected. In such cases, feeding through a gastrostomy rather tends to hasten death from pneumonia because of the regurgitation of food into the lungs. This particular anomaly might be proved definitely by the injection of iodized poppy-seed oil 40 per cent into the trachea. In such cases the performance of a gastrostomy is not indicated. It is conceivable that feeding might be given through a jejunostomy, without regurgitation, until the infant could be gotten in shape for an attempt to close the fistula.

Journal of Pharmacology & Exper. Therap., Baltimore

45: 389-500 (Aug.) 1932

*Relation of Caffeine Dosage to Body Weight in Striated Muscle Response. R. H. Cheney, Woods Hole, Mass.—p. 389.
*Effect of Small Amounts of Ergotamine on Circulatory Response to Epinephrine. G. G. Woods, V. E. Nelson and E. E. Nelson, Ann Arbor, Mich.—p. 403.
Effect of Calcium on Response of Isolated Bronchi to Histamine. Marjorie Gillespie and J. W. Thornton, London, England.—p. 419.
Physical and Chemical Properties of Sodium Iodobismuthite, a Soluble Compound of Electronegative Bismuth for Use in Treatment of Syphilis. C. Gurchot, P. J. Hanzlik and Jean B. Spaulding, San Francisco.—p. 427.
Activity of Iodobismitol in Experimental Rabbit Syphilis, Compared with Some Other Bismuth Compounds and Neoarsphenamine. C. C. Johnson, P. J. Hanzlik, D. C. Marshall and H. G. Mehrtens, San Francisco.—p. 469.
Is Blood Protein Amide Nitrogen a Source of Urinary Ammonia? II. Reply to Bliss. T. P. Nash, Jr., and E. F. Williams, Jr., Memphis, Tenn.—p. 487.

Relation of Caffeine Dosage to Body Weight.—Cheney reports that a definite relationship is evident between the caffeine dosage and the body weight with regard to the fatigue

phenomenon, in sciatic nerve-gastrocnemius muscle preparations, as measured by the isotonic contractions of caffeine-treated and nontreated muscles from the same animal, when equally fatigued under identical circumstances. The effect of each dosage, varying from 0.05 to 0.5 mg., was recorded and analyzed by means of a study of the time required to fatigue the preparations and of the contraction height factor. The optimal dosage of caffeine, as indicated by the fatigue curves after a consideration of the two factors mentioned, was found to be 0.1 mg. per gram of body weight in the case of the gastrocnemius muscle of Rana pipiens Schreber.

Effect of Ergotamine on Circulatory Response to Epinephrine.—Woods and the Nelsons describe experiments in which they demonstrated that, in anesthetized vagotomized dogs, evidence of splanchnic constriction to small doses of epinephrine (from 0.00005 to 0.0001 mg.) intravenously administered, is removed by small doses of ergotamine (0.1 mg. or less), the exact amount required varying in different animals. After such splanchnic paralysis there is still a rise in pressure after epinephrine injections, which rise may be somewhat less than, equal to, or actually greater than that seen before ergotamine administration. This rise is believed to be due in part to cardiac stimulation and in part to vasoconstriction in the skin and mucous membranes, whose vessels are more resistant to ergotamine paralysis than those of the splanchnic region. Doses of ergotamine removing the splanchnic vasoconstriction to doses of epinephrine of the order mentioned do not prevent cardiac acceleration to the same doses of epinephrine. The authors believe that greater emphasis should be placed on the ability of epinephrine to cause a redistribution of the blood, rather than on its ability to produce a rise in blood pressure.

Journal of Urology, Baltimore

28: 127-253 (Aug.) 1932

Presidential Address. A. Randall, Philadelphia.—p. 127.
*Diagnosis and Present-Day Treatment of Ureteral Stone. C. P. Mathé, San Francisco.—p. 133.
Massive Renal Hemorrhage Due to Regenerative Hyperplasia of Collecting Tubules of Papillae of Kidney. M. Muschat, Philadelphia.—p. 157.
*Medical and Surgical Aspects of Hematogenous Infections in Urology. A. Hyman and L. Edelman, New York.—p. 173.
*Carcinoma of Kidney: Degree of Malignancy in Relation to Factors Bearing on Prognosis. J. R. Hand, Portland, Ore., and A. C. Broders, Rochester, Minn.—p. 199.
Unilateral Fused Kidney, L. E. Pierson, Sioux City, Iowa.—p. 217.
Tissue Reaction to Antigonorrheal Drugs. H. L. Wehrbein, New York.—p. 233.
Hyalinization of Hydrocele Sacs. W. H. Toulson, Baltimore.—p. 247.
Removal of Hairpin from Bladder of Four-Year-Old Child with Improvised Instrument. O. T. Kimbrough, Wichita Falls, Texas.—p. 251.

Ureteral Stone.—Mathé points out that the diagnosis of ureteral stone is very accurate (from 95 to 98 per cent positive), provided one employs the perfected methods of ureteral investigation and roentgenologic study now available. The great majority of ureteral stones (from 75 to 90 per cent) can be made to pass if the ureter is dilated so that its diameter will exceed that of the stone, provided any accompanying congenital stricture of the meatus is incised. The indiscriminate use of metal instruments for the purpose of dilating the ureter and grasping, crushing and removing ureteral calculi is condemned, as the injury often caused to the ureter far outweighs the occasional immediately successful removal of the stone. The persistence in the employment of cystoscopic maneuvers in order to relieve impacted calculi, stones lodged in a localized dilated portion or diverticulum of the ureter, is condemned because they do little good and subject the kidney to irreparable damage. The author advises early ureterolithotomy for impacted calculi, for stones showing no tendency to descend, for calculi in the solitary or bifid ureter, and in those patients in whom it is impossible to make repeated cystoscopic treatments.

Hematogenous Infections in Urology.—According to Hyman and Edelman, blood stream invasions in diseases of the urinary tract are not infrequent. Two types are generally recognized—the bacteremias (generally transitory, with little or no mortality) and the septicemias (grave in character, with a high mortality rate). The greater number of infections coming under observation by the authors were due to some form of urethral instrumentation, or were postoperative in origin. Forty-five of sixty-four cases were due to bacillary infections; nineteen, to coccal. The mortality from the bacillary group was 20 per cent; from the cocci, 68.4 per cent. The authors believe that the importance of adequately taking care of the primary focus cannot be overemphasized. This is the main factor in treatment.

Carcinoma of Kidney.—In 193 cases of carcinoma of the kidney, Hand and Broders demonstrated four grades of malignancy. The basis of this grading depended on the degree of cellular differentiation present in the carcinoma. The grade of malignancy was found to be higher if the patients were less than 40 years of age. The two youngest patients in the series were 29 years of age, the oldest was 73 years of age, and the average age was 50. Eighty-four of the patients underwent nephrectomy between the ages of 50 and 60 years. The average ages of the patients with carcinomas of each of the four grades compared with the average life expectancy of the same patients shows the normal span of life to have been shortened considerably. As the degree of malignancy increased, the duration of symptoms decreased; likewise, as the grade of malignancy increased, the length of postoperative life decreased. In those cases in which the grade of malignancy was 2, 3 and 4, the average duration of life following operation was twice as long as the period over which symptoms existed; in those cases in which the grade of malignancy was 1, the average duration of life following operation was three times as long as the period over which symptoms existed. The technical difficulties encountered in removing large carcinomas are important factors in determining immediate mortality. Infection and degeneration are frequent in large carcinomas. The toxemia produced by the infection and by the absorption of degenerating tumor tissue no doubt is a factor tending to undermine the general condition of the patient. Consideration that almost half of the patients operated on died before two years had elapsed raises the question as to the advisability of urging operation in many of these cases in which the carcinoma is large or fixed, or in which the general condition of the patient at the time of operation seems to be below par.

Kansas Medical Society Journal, Topeka

33: 269-312 (Aug.) 1932

Practical Consideration in Bone Surgery. W. E. Mowery, Salina.—p. 269.
Sensible Food for Diabetics. F. A. Trump, Ottawa.—p. 275.
*Lobar Pneumonia in Infants and Young Children. C. G. Grulee, Chicago.—p. 280.
Present Status of Transurethral Operations on Prostate. N. F. Ockerblad, Kansas City.—p. 289.

Lobar Pneumonia in Infants and Young Children.—Grulee is strongly of the opinion that many mistakes have been made in the treatment of lobar pneumonia in children by giving cough mixtures. In his experience the cough has been much more disturbing to the family than to the child. The usual cough mixtures which are advised are highly irritative and nauseous, resulting not only in the child's vomiting but in his refusal to take food. One then by giving cough mixtures removes or weakens one of the chief props which help in saving the child's life; that is, one has destroyed to a large extent the nutritional help, which is so much needed and desired. No cough mixtures are effective, or have been in the author's experience, unless the particular ingredient is some form of opium. He has been greatly impressed with the observation, which has been purely empirical, to the effect that children with pneumonia who receive opiates do not do so well. When one comes down to the final decision regarding the treatment of the cough in the child, one must therefore consider it from many different points of view. The first is whether the child will be more greatly benefited by treatment or without it. In a vast majority of cases, the cough in lobar pneumonia in infants and young children is not a harassing symptom and the child is far better off without any treatment. If, however, in the judgment of the physician the cough is a serious one, he should not put together a cough mixture of the usual sort but should use some simple form of opiate, such as codeine or even morphine in the proper dosage, and not disturb the child's stomach by giving a nauseous mixture consisting of ammonia compounds and what not. One should meet the parents' insistence with a definite statement of the facts; one should treat the child and not the cough and not the disease.

Kentucky Medical Journal, Bowling Green

30: 411-468 (Aug.) 1932

Agranulocytic Angina: Report of Three Cases. W. N. Offutt, Lexington.—p. 417.
Modern Conception and Treatment of Comitant Strabismus. W. T. Davis, Washington, D. C.—p. 419.
Some Observations on Treatment of Interstitial Keratitis. R. H. Cowley, Berea.—p. 423.
Catheterization Versus Myringotomy in Purulent Otitis Media. J. D. Williams, Ashland.—p. 428.
Thermopuncture of Detached Retina. W. Dean, Louisville.—p. 431.
Etiology of Middle Ear Suppuration, with Especial Reference to Sinusitis as Factor. A. L. Bass, Louisville.—p. 436.
Clinical Aspects of Tumors of Jaw and Palate. E. C. Yates, Lexington.—p. 440.
Local Temperature Studies in Diseases of Ear, Nose and Throat. K. N. Victor, Louisville.—p. 445.
Prevalence of Morax-Axenfeld Conjunctivitis. G. C. Hall, Louisville.—p. 451.
Full Time County Health Department and Its Relation to Medical Profession. G. M. Wells, Bowling Green.—p. 453.
Malaria. J. A. Coleman, Stone.—p. 455.
Importance of Recognition of Early Cervical Carcinoma, with Some Remarks on Treatment. Q. U. Newell, St. Louis.—p. 458.
What the General Practitioner Should Know About Goiter. J. R. Wathen, Louisville.—p. 463.

Maine Medical Journal, Portland

23: 133-153 (July) 1932

"Painful Women." E. W. Gehring, Portland.—p. 139.

Medical Annals of District of Columbia, Washington

1: 49-74 (March) 1932

Present Status of Roentgen and Radium Therapy. E. A. Merritt, T. A. Groover and E. M. McPeak, Washington.—p. 49.
Medical and Dental Relations. D. F. Lynch, Washington.—p. 56.
*Primary Carcinoma of Lung with Cerebral Metastases: Report of Four Cases. W. Freeman, Washington.—p. 58.
Postmortem Cesarean Section: Report of Successful Operation. R. T. Holden, Jr., Washington.—p. 63.
Vomiting. J. L. MacKavanagh and T. Koppanyi, Washington.—p. 64.

Primary Carcinoma of Lung.—Freeman points out that the frequency of metastasis to the brain in primary carcinoma of the lung should be remembered by the physician under two peculiar circumstances. In the first place, when the symptoms point to a tumor in the brain, the chest should be studied as a possible primary focus; in the second place, when a patient with peculiar thoracic disease presents evidence of cerebral involvement, the malignant nature of the process should be suspected.

1: 75-106 (April) 1932

Practical Value of Electrocardiogram. L. T. Gager, Washington.—p. 75.
*Practical Aspects of Pentosuria: Report of Four Cases. L. Neuman, Washington.—p. 79.
Review of Thirty-One Cases of Foreign Body of Air and Food Passages. W. H. Jenkins, Washington.—p. 82.
Diagnosis and Treatment of Cancer of Larynx. F. O. Lewis, Philadelphia.—p. 88.
Rôle of Calcium in Body. J. H. Roe, Washington.—p. 95.

1: 177-202 (July) 1932

Basal Anesthetics: Brief Consideration of Their Effects and Comparative Safety. J. B. Bogan, Washington.—p. 177.
Heart Failure Due to Traumatic Femoral Arteriovenous Fistula Cured by Operation: Report of Case. F. R. Sanderson and W. S. Murphy, Washington.—p. 181.
Vaccine Treatment of Thrombo-Angiitis Obliterans. H. L. Colvin, Washington.—p. 185.
Pneumococcus Meningitis Occurring in Two-Day Old Infant. J. W. Lindsay, E. C. Rice and M. A. Selinger, Washington.—p. 188.
Postoperative Liver Abscess: Report of Case. J. L. Collins, Washington.—p. 191.
Recent Advances in Physiology of Sex. E. I. Evans, Washington.—p. 193.

Pentosuria.—Neuman reports four cases of chronic essential pentosuria. All are males of the Jewish race. The ages vary from 3 to 68 years. All show a normal dextrose tolerance curve. Over a period of observation varying from three to twenty-seven years, no case has shown any clinical symptoms related to the pentosuria and there has been nothing to suggest a change to true diabetes. A familial condition is present in one case. This small series would therefore corroborate the generally held opinion that this disease is harmless, is not affected by diet, and constitutes an "inborn error of metabolism." The author emphasizes the following points regarding pentosuria: 1. The necessity of careful chemical investigation of the urine and the blood in cases presenting "sugar" in the urine is important before making a diagnosis of diabetes and administering insulin. 2. Individuals with pentosuria should not be subjected to a restricted diet nor should they be classed as substandard insurance risks. 3. They present a type of hereditary anomaly which is essentially harmless when treated as such. 4. Pentosuria presents the interesting problem of the exact nature of this metabolic disorder. In essential pentosuria the excreted pentose varies within narrow limits. Garrod assumes that the uniformity of the excretion is due to the failure of the body to utilize some definite part of the metabolized protein. 5. Again the important triad of a careful history, physical examination and laboratory study becomes the keynote of accurate diagnosis.

Occupational Therapy and Rehabilitation, Baltimore

11: 233-338 (Aug.) 1932

Occupational Therapy: Its Aims and Developments. T. B. Kidner.—p. 233.
Our Attitude Toward Mental Patients. H. M. Bosshard, Worcester, Mass.—p. 241.
Art of Occupational Therapy. H. M. Pollock.—p. 253.
Occupational Therapy as Given at Montefiore Hospital for Chronic Diseases. V. J. Jacobsohn, New York.—p. 261.
Early Experiment in Field of Occupational Therapy at St. Lawrence State Hospital. R. H. Hutchings, Utica, N. Y.—p. 275.
Review of Vocational Rehabilitation in Minnesota Over a Ten-Year Period. K. Nilson, St. Paul.—p. 285.
Curative Workshop and Traumatic Surgical Cases. J. S. Coulter and Henrietta McNary, Chicago.—p. 291.
Occupational Therapy for Tuberculous Veteran. D. Brown and A. Edna Buvens, Rutland Heights, Mass.—p. 301.
Rug Weaving as a Business. Dorothy R. Carmer.—p. 313.

Ohio State Medical Journal, Columbus

28: 553-616 (Aug.) 1932

Fracture of Neck of Femur. C. H. Heyman, Cleveland.—p. 573.
Jaundice: Its Clinical Aspects. T. L. Bliss, Sewickley, Pa.—p. 576.
Narcolepsy. G. T. Harding 3d, and T. Berg, Columbus.—p. 581.
Treatment of Carcinoma of Colon by Surgical Methods. F. W. Rankin, Rochester, Minn.—p. 585.

Radiology, St. Paul

19: 67-134 (Aug.) 1932

Undescended Scapula with Omovertebral Bone. B. H. Jackson, Scranton, Pa.—p. 67.
*Tumors of Duodenum and Hypertrophied Gastric Mucosa Prolapsing Through Pyloric Canal into Duodenum: Case Reports, with Review of Literature. E. L. Shiflett, Cleveland.—p. 79.
Why Continue Nitrocellulose Film?: Challenge to Hospital Authorities. R. S. Moulton, Boston.—p. 91.
Problem of Ethical Educational Publicity in Radiology. B. C. Cushway, Chicago.—p. 93.
Radiographic Diagnosis of Early Pregnancy. A. J. Thomas, Shreveport, La.—p. 99.
Comparative Tests on Single Valve Rectified and Mechanically Rectified Radiographic Apparatus. C. Weyl, S. R. Warren, Jr., and C. J. Garrahan, Philadelphia.—p. 105.
Reports of Roentgen Observations. I. S. Trostler, Chicago.—p. 110.
Behavior of Air-Cooled Roentgen-Ray Tubes Operated on Transformers with Valve Tube Rectification and Condensers. E. A. Pohle, Madison, Wis.—p. 113.

Tumors of Duodenum.—According to Shiflett, tumors of the duodenum and benign gastric hyperplasias prolapsing through the pyloric canal into the duodenum occur with such relative infrequency as to justify detailed reports of cases as they occur. The diagnosis is difficult and treatment is often misdirected. Though rare, these conditions have been established as clinical entities and they should receive reasonable consideration in the diagnosis of gastric complaints. The author reviews the literature on the subject and places on record the roentgenologic observations in two unusual cases, one, a sarcoma of the duodenum, metastatic from an identical lesion on the thigh, the other, an hypertrophy of the gastric mucosa, lengthened out in the form of a polypoid mass which at times prolapsed into the duodenum.

Rhode Island Medical Journal, Providence

15: 115-134 (July) 1932

Medical Programs, the Fiske Fund and Clinical Research. H. L. Barnes, Wallum Lake.—p. 115.
Report of Delegate to American Medical Association. R. Hammond, Providence.—p. 118.

15: 135-148 (Aug.) 1932

Chronic Hyperplastic Maxillary Sinusitis. L. B. Porter, Providence.—p. 135.
Interposition Operation in Treatment of Uterine Prolapse and Cystocele: Analysis of End-Results of One Hundred and Seventy-Eight Consecutive Cases. L. E. Phaneuf, Boston.—p. 137.

Surgery, Gynecology and Obstetrics, Chicago

55: 129-264 (Aug.) 1932

*Eclampsia: Its Prevention and Control by Means of Fluid Limitation and Dehydration. J. O. Arnold and T. Fay, Philadelphia.—p. 129.
Primary Carcinoma of Lung: Report of Case Treated by Operation. C. I. Allen and F. J. Smith, Detroit.—p. 151.
*Respiratory Complications Following General Anesthesia. Mary Lyons, Chicago.—p. 162.
Changes in Bile Ducts and Parietal Sacculi Following Absence of Gallbladder. F. W. Cox, Rochester, Minn.—p. 168.
*Maggots and Their Use in Treatment of Chronic Osteomyelitis. J. Buchman and J. E. Blair, New York.—p. 177.
Indications for and Technic of Ileostomy in Chronic Ulcerative Colitis. J. A. Bargen, P. W. Brown and F. W. Rankin, Rochester, Minn. —p. 196.
Unusual Considerations Affecting Reconstructive Surgery for Paralytics. C. L. Lowman, Los Angeles.—p. 203.
Pelvic Diagnosis by Roentgen Visualization. I. F. Stein, Chicago. —p. 207.
Wire Traction in Fractures of Lower Extremity. R. M. Carter, Green Bay, Wis.—p. 213.
Thyrotoxicosis in the Negro. L. G. Herrmann, Cleveland.—p. 221.
*Vascular Anomalies of Extremities: Report of Five Cases. G. de Takáts, Chicago.—p. 227.
*Management of Fracture of Mandible. G. C. Hensel, San Francisco. —p. 238.
Solid Pure Fibroma of Mesentery in Children. J. E. Summers, Omaha. —p. 244.

Eclampsia.—Arnold and Fay present a series of cases illustrating a method of fluid balance and dehydration in the preeclamptic, dangerously threatening and actively convulsant groups, with and without chronic nephritis as a complicating factor. The results have indicated that the rational, proper balance of fluids has controlled the cerebral symptoms of headache, vomiting, stupor, convulsions and respiratory disturbances; that systolic hypertension has been favorably influenced, and that the renal function has definitely improved in the majority of cases. Because of the absence of any mortality in this series or in the cases coming under their care since they inaugurated this treatment, and the marked beneficial and prolonged results obtained during the past two years, it is the authors' opinion that further continuation and refinement of this method are warranted. Certain fundamental clinical principles long recognized have been placed in a better physiologic relationship, and continued maintenance of the former temporary improvements obtained by older clinical methods justify the belief that the condition known as eclampsia is subject to prevention and control along the lines of a properly established water metabolism. In the analysis of the problem, it is evident that symptoms must be divided into those related to cerebral disturbance secondary to a superimposed hydration state with characteristic responses attributable to "water intoxication," and those symptoms and disturbances which are fundamentally responsible for the initiation of a definite imbalance in water metabolism throughout the body. That a demonstrable toxin is unnecessary for the production of the clinical cerebral signs has been well established by the physiologic work of Rowntree and supported by the clinical observations of many practical obstetricians. In the authors' opinion, eclampsia is probably a syndrome rather than a "disease" and takes its origin from a variety of disturbances which produce a common cerebral reaction indicating that no specific etiologic cause can be expected to be responsible for the various clinical manifestations of this condition. Thus, by separating the eclamptic state into its cerebral and systemic component parts, it has been possible to direct the treatment toward the cerebral manifestations with strikingly beneficial results.

Respiratory Complications Following General Anesthesia.—Lyons reports that in 6,619 inhalation anesthesias, lung complications developed in 63 patients, representing a morbidity of 0.95 per cent and a mortality of 0.48 per cent. Males are apparently more susceptible than females. Any respiratory complication developing within thirty days after operation is included in this report. There were 218 operations performed on the breast, 114 on the vagina, and 604 tonsillectomies, without a respiratory complication. In 201 fractures, only one lung complication developed. Lung complications developed in thirty-nine patients (61.9 per cent) during the winter months. In patients over 60 years of age, there were 19 deaths, 31 per cent. In 31 patients, 49 per cent, there were heart or lung lesions prior to operation; 24 of these died and 7 recovered. The site of operation is a factor, as shown by the following: 22 cases, 34.9 per cent, following upper abdominal operations; 9 cases, 14.28 per cent, following lower abdominal operations (6 hernias); 9 cases, 14.28 per cent, following cystotomies and prostatectomies; 5 cases, 7.93 per cent, following kidney operations; and 18 cases, 28.57 per cent, following operation in other locations. There were no cases of postoperative atelectasis diagnosed.

Maggots in Treatment of Osteomyelitis.—Buchman and Blair consider that, on the whole, notwithstanding the great amount of work, trials and expense incidental to the method, the maggot therapy of osteomyelitis is safe, efficient, and productive of good results—results at times so rapid and excellent as to overshadow all other methods available. One need but watch the daily change in the appearance of the wound, its gradual obliteration without the extensive scarring noted in other methods and the comparative comfort of the patient, to realize that the maggots are instituting a superior process of healing. The authors feel, however, that, before this treatment becomes general, further study and experimentation are necessary to elucidate many problems and questions that arise and to insure a continuous supply of maggots—a difficult problem—on the success of which will depend the popularity, applicability and success of the treatment.

Vascular Anomalies of Extremities.—According to de Takáts, vascular growths of the extremities are not true angiomas but are all due to faulty development. The variations encountered and enumerated as angioma simplex, cavernous and racemose angioma, diffuse phlebectasia and congenital arteriovenous fistula are all due to the various stages of development in which the aberration from the normal occurred. The author presents five cases that represent various stages of developmental arrest. The methods utilized in diagnosis are discussed. The roentgen visualization of the feeding vessel may lead the surgeon to a direct attack of the anomalous communication. Early radical excision supplemented in suitable cases with obliterative injections offers the best hope for permanent results.

Management of Fracture of Mandible.—Hensel calls attention to the fact that double fracture of the mandible is common. Search for a second fracture always should be made. Three roentgen projections should be secured as a routine. Treatment should have as its goal a result that fulfils three requirements: (1) bony union, (2) proper occlusion of the teeth, and (3) proper function of the mandible as a whole. Accurate reduction with intra-oral fixation of fragments should be effected promptly. Moderately loose teeth should not be extracted; they may become firmly fixed as repair proceeds. Dental attention should be given during and after union. Severe malunion, nonunion, and bone infection require operative care. Rotation of the ascending ramus complicates fractures with displacement. Union in malposition with such rotation of the ascending ramus gives rise to permanent derangement of the temporomandibular joints and impaired function of the mandible as a whole.

Virginia Medical Monthly, Richmond

59: 263-322 (Aug.) 1932

Gastric and Duodenal Secretion: Tabulated Comparison of Stimuli. R. S. Preston, Richmond.—p. 263.
Management of Injuries: Some Cautions. C. B. Morton, University. —p. 274.
Acute Appendicitis. M. H. Todd, Norfolk.—p. 279.
Common Chronic Infections of Vagina and Cervix. E. L. Kendig, Victoria.—p. 285.
Diagnosis and Treatment of Vascular Diseases of Extremities, with Especial Reference to Thrombo-Angiitis Obliterans. D. G. Chapman, Richmond.—p. 288.
Treatment of Secondary Anemia. E. L. Caudill, Elizabethton, Tenn. —p. 293.
Value of Blood Examinations in Public Health Work. R. A. Vonderlehr, Washington, D. C.—p. 295.
Typhoid Ulcers of Stomach: Report of Case. H. Hull and L. C. Pusch, Richmond.—p. 297.
Intermittent Complete Heart Block: Case Report. L. T. Gager, Washington, D. C.—p. 300.
Pemphigus of Eyes, Nares, Pharynx and Larynx. H. L. Mitchell, Lexington.—p. 302.
Subcutaneous Emphysema Complicating Measles Bronchopneumonia. B. B. Jones, Richmond.—p. 304.
Incidence of Pyelitis in First Two Years of Life. A. S. Hurt, Jr., Richmond.—p. 305.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

49: 115-176 (Summer) 1932

Suprarenal Hypertrophy. J. R. Charles.—p. 115.
Suprarenal Virilism. J. A. Birrell.—p. 119.
Management of Ear, Nose and Throat in Influenza. A. J. Wright. —p. 123.
Notes on Treatment of Some Common Ocular Affections. E. R. Chambers.—p. 131.
Notes on Surgical Jaundice. C. A. Moore.—p. 139.
Insomnia. R. G. Gordon.—p. 147.

British Journal of Ophthalmology, London

16: 449-512 (Aug.) 1932

*Complete and Incomplete Forms of Benign Disorder Characterized by Tonic Pupils and Absent Tendon Reflexes. W. J. Adie.—p. 449.
Contact Glasses. B. W. Rycroft.—p. 461.
Contact Glass as Aid in Corneal Plastic Surgery. R. E. Wright. —p. 473.
Optical Iridectomy, Indications, Method and Value. J. Foster.—p. 476.
*Progressive Myopia: Suggestion Explaining Its Causation, and for Its Treatment. J. P. S. Walker.—p. 485.

Disorder Characterized by Tonic Pupils and Absent Tendon Reflexes.—Adie points out that the disorder characterized by tonic pupils and absent tendon reflexes manifests itself in several clinical forms; these can be referred to conveniently as complete and incomplete forms. The complete form is characterized by the presence of the tonic convergence reaction in a pupil apparently inactive to light and by absence or diminution of one or more of the tendon reflexes of the lower limbs. The incomplete forms present (1) tonic pupils alone, (2) atypical phases of the tonic pupil alone, (3) atypical phases of the tonic pupil with absent tendon reflexes, and (4) absent tendon reflexes alone. In the atypical phases, reactions are absent or difficult to detect. Most of the cases encountered in ophthalmologic and neurologic practice of ophthalmoplegia interna, ophthalmoplegia interna unilaterale, iridoplegia and partial iridoplegia for which no cause can be found are probably examples of an incomplete form of this disorder. No known hereditary or acquired morbid factor plays any part in its production. In particular, it has no relation to syphilis. It runs a benign course without the addition of further symptoms and is compatible with long life.

Progressive Myopia.—Walker calls attention to the following facts: 1. In myopia the globe of the eye is elongated, and in progressive myopia this elongation presumably increases. The sclera therefore must be stretching. As there is no hint of an increase of tension within the globe, it follows that the sclera itself cannot be as tough and resistant to expansion as in the normal eye and that this "weakness" must be evenly distributed throughout. In cases of staphyloma one finds that there has been a local "weakening" and stretching of the sclera, and in total ectasia the stretching is general. If, therefore, one can demonstrate that the sclera in myopia is weakened, here is a link in the chain to explain the elongation of the globe in myopia. It has been suggested that the ocular muscles pull on the globe, thereby assisting in the elongation, this pull being due to an abnormal correlation between accommodation and convergence. This suggested that the treatment required is a full correction of the error of refraction by the constant use of concave lenses. But it is obvious that in spite of such correction the myopia increases in many cases. Progressive myopia, therefore, must be influenced by some more general condition. 2. Progression is mostly to be found during adolescence, which is a period of stress to the child, who is growing rapidly and whose internal secretions are undergoing changes. 3. In the majority of cases, progression appears to stop spontaneously when adolescence ceases; in other words, in the early twenties. 4. In a great number of these cases there is an aberration of growth of the body. The weight of the child in not increasing proportionately to the height. 5. In some of the cases under the author's care, dental caries was present and he was told by the parents that the dentist had stated that in his opinion the child was suffering from calcium deficiency. The latter statement, taken together with the increase in the length of the long bones due to growth, suggested to him a possible expianation of the question. If the bones are growing rapidly, they require calcium. Is progressive myopia a symptom of calcium deficiency? He therefore asked the physicians who had sent him myopic children for refraction and the prescription of glasses to give them calcium for long periods. He started this administration of calcium about three years ago, and the results have been both suggestive and promising.

British Journal of Surgery, Bristol

20: 1-216 (July) 1932

*Operation for Cleft Palate. D. Browne.—p. 7.
Giant Gallstone Impacted in Colon and Causing Acute Obstruction. G. G. Turner.—p. 26.
Earliest Surgical Treatise. W. R. Dawson.—p. 34.
Transplantation of Right Ureter into Cecum and of Left into Sigmoid Five Years Afterward: Case. C. E. L. Burman.—p. 44.
Leukoplakia in Urinary Tract: Report of Case. H. P. Winsbury-White. —p. 49.
Prevascular Femoral Hernia. G. Keynes.—p. 55.
Reconstruction of Forearm After Loss of Radius. H. H. Greenwood. —p. 58.
Note on Movements of Shoulder Joint. C. P. Martin.—p. 61.
*Some Experiences with Sympathetic Ganglionectomy. F. A. R. Stammers.—p. 67.
*Acute Perforated Peptic Ulcer: Review of Sixty-Four Cases. J. Gilmour and J. H. Saint.—p. 78.
*Carcinoma of Cecum: Discussion of Its Incidence, Diagnosis and Treatment: Report of Twenty-Five Personal Cases. C. P. G. Wakeley and R. Rutherford.—p. 91.
Report of the Strangeways Collection of Rheumatoid Joints in Museum of the Royal College of Surgeons. R. L. Knaggs.—p. 113.
Implantation of Ureters for Inoperable Vesicovaginal Fistula and Ectopia Vesicae: New Technic. V. B. Green-Armytage.—p. 130.
Resection of Presacral Nerve in Urologic Cases. G. S. Foulds.—p. 139.
Eight Letters of Joseph (Lord) Lister to William Sharpey. C. R. Rudolf.—p. 145.

Operation for Cleft Palate.—Browne says that the sufferer from cleft palate has one great disability: he is unable to shut off the nose from the mouth at will. The object of operation must be the production of this missing power, and the simplest way to produce it is to imitate the normal mechanism. The first step in planning the operation must be to define the exact manner in which the closing of the nasopharynx is normally performed. It is surprising to see how little attention is given to this point in standard works. Usually the operation is treated almost as if it resembled that for harelip in having for its object appearance rather than function. In spite of the soft palate's being composed of actively contractile muscle, it seems to be assumed that it closes the nasopharyngeal passage by falling passively against the posterior wall of the pharynx, in the manner of a flap valve. The author gives an account of the action of the normal soft palate, and from this and the principles of general surgery he deduces a technic of operation.

Sympathetic Ganglionectomy.—Stammers points out that if it is assumed, as it is by many authorities, that vasospastic conditions are due to overaction of the sympathetic nervous system, the operation of periarterial sympathectomy as an attempt to denervate the whole arterial tree of a limb is anatomically unsound. Nevertheless, Leriche's operation has its uses in cases of temporary interference with the nutrition of limbs and may also prove beneficial in those patients requiring full sympathectomy but who are not in a fit state for the major procedures. Complete sympathetic denervation of the upper limb demands removal of the inferior cervical and first and second ganglions together with the intervening chain; that of the lower limb requires removal of the second, third and fourth lumbar ganglions plus the intervening chain. The sympathetic control to the sigmoid colon can be abolished by excision of the presacral nerve or by severing the lumbar-colonic nerve. Before deciding on sympathectomy in vasospastic conditions, one must be quite certain that the case presents irrefutable evidence of sympathetic hypertonicity—that is, an upset of the normal sympathetic-parasympathetic balance. This can be proved by inducing a fever in the patient and noting the degree of vasodilatation that ensues.

Acute Perforated Peptic Ulcer.—Gilmour and Saint report a series of sixty-four cases of acute perforated peptic ulcer. Sixty-three were treated by simple suture and one by suture plus gastro-enterostomy. The mortality rate in patients operated on under twelve hours was 0.5 per cent, and in patients over twelve hours, 15 per cent. The total mortality was 4.7 per cent. The authors are of the opinion that these low figures fully justify the use of simple suture as the routine treatment

of acute perforated ulcer. The remote results of simple suture, suture plus gastro-enterostomy, and excision and pyloroplasty are not so good as those recorded after resection. On this account, in treating recurrent ulcer or complications one should be prepared to consider partial resection rather than palliative measures as a secondary operation. Approximately one third of the patients eventually had to have a secondary operation performed, the remaining two thirds being in such good health as to preclude the necessity for further operative intervention.

Carcinoma of Cecum.—Wakeley and Rutherford state that carcinoma of the cecum is a disease that is preponderant in the male and occurs in the fifth and sixth decades, the majority of patients being in the fifties. The primary neoplasm is usually situated opposite the ileocecal valve. From this fact it may be inferred that trauma is a definite factor and that the trauma is biochemical in nature. The growth is invariably an adenocarcinoma, in which colloid degeneration is common. Metastases do not occur until the symptoms have been present for many months; consequently early removal will procure complete immunity. In the differential diagnosis, appendicitis is suspected in the majority of cases. In elderly patients the presence of a tumor in the right iliac fossa and absence of vomiting should place the surgeon on his guard. A high leukocyte count is no guide, as septic absorption from the tumor in a patient with good resistance produces leukocytosis. Surgical treatment should consist of an exploratory laparotomy, when ileocolostomy is to be performed should carcinoma be discovered. After an interval of from a week to ten days, this is to be followed by excision of 8 inches of the terminal ileum, cecum, ascending colon, and hepatic flexure. When symptoms have been present for any period short of one year, anastomosis and resection offer definite cure. With a few exceptions, when symptoms have lasted more than one year, operation offers no more than one year of life.

British Medical Journal, London

2: 183-228 (July 30) 1932

The Private Practitioner and Preventive Medicine. G. Newman.—p. 190.
*Removal of Prostate: Indications and Methods. J. S. Joly.—p. 192.
*Sequelae of Prostatectomy. K. M. Walker.—p. 196.
*Milk-Borne Diseases. S. R. Douglas.—p. 198.

Removal of Prostate.—Joly describes the technic of suprapubic prostatectomy. The success of this operation depends largely on free communication between the bladder and the prostatic cavity; in fact, the latter should be considered as a portion of the former. The patient depends entirely on the compressor urethrae for his sphincteric control, and this muscle is quite sufficient for the purpose. When a perineal prostatectomy is performed, the compressor may be damaged during the operation or its muscular fibers may be entangled in the scar. For this reason surgeons who practice perineal prostatectomy endeavor to restore the function of the internal sphincter in order to prevent incontinence. In this they are rarely successful, because if the prostate is at all large the internal sphincter is so stretched that it cannot recover, and if the prostate is small and fibrous the sphincter itself is transformed into a fibrous ring. Some operators endeavor to narrow the opening between the bladder and the prostatic cavity, and also to cover a portion of the raw area in the latter by bringing down a flap of mucous membrane from the bladder. The author believes that it is advisable to leave the opening between these two cavities as wide as possible, as by this means the best functional results are obtained. About ten years ago he tried to reduce the size of the raw area in the prostatic cavity by bringing down flaps of mucous membrane derived from the covering of the intravesical projection of the prostate, but he gave up doing so. The flap either sloughed or tended to occlude the internal meatus, and the results were not good. The prostatic cavity always becomes infected and is unsuited for plastic operations. It rapidly contracts after operation and generally becomes covered with epithelium derived either from the base of the bladder or from the urethra.

Sequelae of Prostatectomy.—According to Walker, failure of the suprapubic prostatectomy wound to close may be partial or complete; that is to say, the sinus may remain persistently open or else, having closed for a period, may again become patent, so that the patient who has micturated normally suffers the disappointment of seeing himself back again in a state which appears to him little different from that which existed a week or so after his operation. A persistent suprapubic sinus, although it cannot be regarded as a common sequel of prostatectomy, is an annoying one to the physician and the patient alike. The factors that may determine its occurrence are (1) persistent sepsis, (2) the presence of an obstruction to the passage of urine, and (3) adherence of the vesical wall to the abdominal wound with (in extreme cases) hernia of the bladder through it. One alone of these factors is sufficient to prevent closure of the suprapubic sinus, but not infrequently two are combined—more especially persistent sepsis associated with a certain degree of postprostatectomy obstruction.

Milk-Borne Diseases.—Douglas points out the importance of milk-borne diseases; their existence is recognized not only by medical and veterinary practitioners but also by the general public. They may be divided into two classes: (1) those in which the milk becomes contaminated after withdrawal from the cow—for instance, typhoid and the paratyphoid group of fevers, some epidemics of streptococcic and staphylococcic sore throats, and perhaps scarlet fever; (2) those the causative organism of which actually infects the cow and is excreted with the milk; these include bovine tuberculosis, undulant fever, and perhaps certain epidemics of sore throat, scarlet fever and diphtheria. The diseases in the first category are usually associated with cases in man or with carriers of the specific microbe in individuals, such as milkers or others who are concerned with handling milk. Occasionally the contamination is less direct, and outbreaks have been described in which water fouled by excreta of infected people has been used to clean vessels employed in the distribution of milk. Whatever the source of the contamination, the milk acts simply as a suitable medium for the multiplication and conveyance of the specific micro-organism to the consumer; the cow is unaffected and perfectly healthy. Investigation of such epidemics shows that all cases of the disease can be connected with a particular source of milk supply, and further research usually results in the discovery of individuals who are infected or are carriers of the causative micro-organism. Such a history can be obtained in many epidemics caused by the typhoid bacillus or members of the Salmonella group of bacteria. In the case of outbreaks of sore throat and scarlet fever, however, although the usual method of milk contamination is from infected human beings after withdrawal from the cow, there is some evidence that the cow's udder can be infected occasionally by milkers or others. In the second category, the most completely studied disease is bovine tuberculosis.

Lancet, London

2: 273-324 (Aug. 6) 1932

Medical Journalism in British Empire. N. G. Horner.—p. 273.
*Lung Collapse Therapy. H. M. Davies.—p. 274.
*Ependymal Cyst of Third Ventricle Associated with Diabetes Mellitus. F. B. Byrom and Dorothy S. Russell.—p. 278.
Observations on Constitution of Estrus-Producing Hormone. G. F. Marrian and G. A. D. Haslewood.—p. 282.
Diathermy in Obstinate Constipation. Violet M. H. Rendall.—p. 284.

Lung Collapse Therapy.—Collapse therapy is defined by Davies as the treatment of the lung or lung and parietes whereby the volume of the lung is diminished, cavities are obliterated, and abnormal dilatations of the bronchi and bronchioles are reduced. A further purpose is served by the collapse in that the lung is brought into a state of comparative rest and there is at the same time a condition of lymph and blood stasis. There are five chief ways of obtaining lung collapse; namely, pneumothorax, oleothorax, hemidiaphragmatic paralysis, thoracoplasty and extrapleural pneumolysis. Each of these methods attains its object of reducing the volume of the lung either by what may be called "passive collapse" or by "active compression." These are two different principles which, owing to possible complications, have an important bearing on the after-results. Another factor of great importance, because of its influence on complications, is that in some of the methods the collapse is dependent on the introduction of a foreign substance, but in others the collapse is effected by alterations of one or more of the surrounding walls. It can be stated as a general principle that the reduction of the lung volume should always be obtained by collapse methods, if possible, as opposed to methods that exercise compression.

Collapse in itself is a harmless procedure, but compression at once brings into prominence new factors that may have an unfavorable influence. Chief among these are a tension strain on diseased areas, such as adhesions and cavities, and also displacement of normal structures, causing interference with function. A second general principle is that the introduction of foreign substances, especially as a permanent measure, should, if possible, be avoided, as they tend to produce irritation of the tissues with which they come in contact; nor do the tissues necessarily acquire a tolerance with the passage of time.

Ependymal Cyst of Third Ventricle.—Byrom and Russell describe a case in which a cyst of the third ventricle was associated clinically with diabetes mellitus. It cannot be unequivocally proved that this association was not a coincidence. Yet considered in the light of the connections known to exist between the hypothalamic nuclei and the sympathetic nervous system, it is suggested that chronic irritation of the gray matter of this region may have caused a sympathetic hyperglycemia of sufficient degree and duration to initiate progressive diabetes mellitus in a patient congenitally predisposed to the disease. The case is of some practical interest. It occasionally happens that a patient admitted to a hospital as suffering from diabetic coma fails to respond to treatment and is found, on postmortem examination, to have suffered from a cerebral lesion such as tumor or hemorrhage. In such a case, just as in diabetes mellitus, the patient may be in coma and the blood sugar may be extremely high. As a rule, however, it should be possible to establish the correct diagnosis during life. In true diabetes, the gross ketosis that is responsible for the coma is attended by an extreme depletion of the extracellular and intracellular fluid reservoirs of the body. The tongue is dry and shriveled, the skin is lax, the pulse is thready, and the intra-ocular tension is lowered. In the case of a cerebral lesion none of these signs of gross dehydration are present, and although there may be ketonuria (a circumstance for which starvation is presumably responsible) it is of relatively small degree. It is of vital importance to establish the direct diagnosis at the outset, for the treatment is diametrically opposite in the two conditions. In diabetic coma it is imperative to correct the dehydration by the prompt use of intravenous or subcutaneous injections of physiologic solution of sodium chloride. In cerebral lesions, on the contrary, it may be desirable to lower the intracranial tensions by promoting dehydration. Injection of hypertonic solution of sodium chloride may accomplish this end, but the use of physiologic solution of sodium chloride is clearly contraindicated. When one is confronted with a case of apparent diabetic coma, it is important to consider the possibility that both the coma and the glycosuria have been caused by a gross cerebral lesion and to view in their correct perspective such positive data as a high blood sugar, glycosuria, ketosis, and a previous history of "diabetes." In forming an opinion, one should regard the presence or absence of gross dehydration as evidence of the greatest diagnostic significance.

Medical Journal of Australia, Sydney

2: 35-64 (July 9) 1932

Types of Angina Pectoris. M. D. Silberberg.—p. 35.
Syphilis of Heart and Great Vessels. G. Lendon.—p. 41.
Cardiovascular Syphilis as Revealed at Postmortem Examinations. J. B. Cleland.—p. 46.
Prostatectomy with Closure of Bladder, with Reference to Modification of Harris Operation. W. J. Close.—p. 47.

2: 65-86 (July 16) 1932

Sarcoma and Endothelioma: Frequently Incorrect Diagnoses. R. A. Willis.—p. 65.
*Complications and Sequelae of Exanthems. L. Hughes.—p. 70.
*Some Aspects of Sinusitis and Otitis Media in Infectious Fevers. A. O. Davy.—p. 72.
Myth of Constipation and Pandemic of Aperientitis. H. O. Lethbridge. —p. 76.
Gallstones Found Post Mortem. I. Hamilton.—p. 78.

Complications and Sequelae of Exanthems.—Hughes points out that the decline in the mortality rate in scarlet fever and diphtheria during the present century has thrown into relief the continued mortality of measles. During the past four years in London, measles has caused eight times as many deaths as scarlet fever and one and a half times as many as diphtheria. Further, measles accounts for numbers of patients (children) with chronic ill health and pulmonary infection who are commonly seen in outpatient departments in the hospitals.

Sinusitis and Otitis Media in Infectious Fevers.—Davy emphasizes the importance of prophylaxis of deafness and chronic suppurative otitis media in the infectious fevers. He believes that it depends on the early recognition and treatment of acute otitis media. The possibility of the occurrence of acute otitis media in any infectious fever should always be borne in mind. As its onset may be painless, the drums should be regularly inspected and the hearing tested daily with a watch. If it does occur, paracentesis should be performed without delay. In scarlet fever, paracentesis should be performed at the earliest sign of inflammation of the drum; that is, without waiting for it to become red and bulged. In addition, treatment to reduce congestion and swelling in the nose and throat is employed, which is in many respects similar to that recommended for acute sinusitis. If acute mastoiditis supervenes, the mastoid antrum is opened and drained. In all cases, and especially when aural discharge persists, adenoids should be curetted as soon as possible, dental caries attended to, and, if necessary, tonsillectomy performed. Coexisting nasal sinusitis should be looked for and treated. If, in spite of these measures and general treatment, the aural discharge lasts for some five or six weeks and does not show definite promise of shortly ceasing altogether, it is desirable that something more be done to prevent the continuation of the suppuration, which now threatens to be indefinitely prolonged. The author suggests that the correct procedure in many cases is to open and drain the mastoid antrum without further delay, even in the absence of symptoms and signs of mastoiditis, with the object of aiding the middle ear to return as rapidly and as nearly as possible to normal. This sounds like a rather drastic measure for what is too often regarded as an unimportant condition. But it is a simple and safe procedure in experienced hands. The author has seen innumerable examples of serious results from delayed mastoid drainage, but he has yet to see any ill effects from its early establishment. When no abnormality exists in the nose or throat, even earlier mastoid drainage should be considered, especially in postscarlatinal otitis. This suggested extension of the usually accepted indications for drainage of the mastoid antrum will save many patients from the disability and discomfort of deafness. But more especially it should lessen the incidence of that tragic sequela of the infectious fevers, with all its dangerous possibilities, known as chronic "running ear."

Japanese Journal of Gastroenterology, Kyoto

4: 1-74 (April) 1932

Tissue Respiration of Liver and Spleen in Cases of Obstructive Jaundice. K. Kanasaki.—p. 1.
Urea-Excreting Function of Liver: Report III. Location of Excreting Function. M. Sakai.—p. 9.
Contribution to Knowledge of Acid Hemolysis of Erythrocytes. K. Kanasaki and S. Hosono.—p. 17.
Contribution to Knowledge of Genesis of Jaundice: Experiments Carried Out on Rabbits Fed on Lanolin: Serochemical Investigation of Jaundice Occurring in Rabbits Fed on Lanolin, and Bilirubin-Excreting Function of Their Liver and Kidneys. T. Maeda.—p. 26.
Clinical and Experimental Studies on Urobilin-Bodies: Report VII. Studies on Artificial Urobilinemia: I. In Normal Cases. M. Oshima. —p. 41.

Journal of Oriental Medicine, South Manchuria

16: 41-59 (April) 1932

Auditory Ossicle Conduction. H. Tsukamoto, M. Shinomiya and H. Hagami.—p. 41.
Sweating Due to Moderate Muscular Exercise. C. L. Hou and K. W. Kuo.—p. 47.
Abolishment of Effect of Mental Stress on Perspiration of Palm, and Its Suppressive Action on General Sweating at High Surrounding Temperatures. K. W. Kuo.—p. 48.
Malaria in Fushun, Manchuria, During Past Ten Years. T. Kudo. —p. 50.
Helminth Eggs on Vegetables in Mukden. M. Yosesato and I. Sumi. —p. 51.
Principal Foods of Chinese Population of Lower Class in Dairen. T. Shidoh, M. Watanabe and A. Abiko.—p. 52.
Principal Foods of Chinese Population of Upper Class. T. Shidoh, M. Watanabe and A. Abiko.—p. 54.
Influence of Radium on Tuberculous, Carcinomatous and Simple Erosions of Portio Vaginalis Uteri: Part I. Tuberculous Erosion. M. Sasaki.—p. 55.
Laryngeal Cavity in Chinese. M. Sayama.—p. 58.

Policlinico, Rome

39: 1389-1424 (Sept. 5) 1932. Practical Section

Research on Mediterranean Exanthematic Fever. U. Reitano and U. Boncinelli.—p. 1389.
Rupture of Aneurysm of Basilar Artery: Case. M. Andreucci.—p. 1394.
*Stenosis of Larynx Due to Chickenpox. L. Tiberio.—p. 1397.

Stenosis of Larynx Due to Chickenpox.—Tiberio states that the disease is exceptionally rare. He cites the case of a child, aged 3 years, in which the condition was probably caused by irritation of the laryngeal mucosa following the formation of eruptive varicelloid elements. Previous to surgical intervention, a bacteriologic culture of the laryngeal-pharyngeal secretion did not yield any diphtheritic bacilli. The laryngeal stenosis was consequently of pure varicelloid nature. The lack of a secondary diphtheritic infection was confirmed by the fact that at the aperture of the trachea there was no trace of membrane and by the rapid disappearance of the disease after operation, even without recourse to any specific treatment (serotherapy). Tracheotomy was performed in preference to intubation with favorable results. Complete cure was effected in twenty days.

Archiv für klinische Chirurgie, Berlin

171: 447-642 (Aug. 17) 1932

*Experimental Investigations on Development of Thrombosis: Significance of Blood Platelets. W. König.—p. 447.
Fractures by Muscular Traction. W. Wagner.—p. 503.
Plaster-of-Paris Splints with Pressure Cushion as Simple Aid in Reduction of Fractures of Long Bones. W. Fölsch.—p. 515.
Surgical Treatment of Hallux Valgus. Dengler.—p. 530.
*Demonstration of Peripheral Nerves in Roentgenogram. W. Löhr and W. Jacobi.—p. 538.
*Subchondral Focal Disease of Third Metacarpus. H. Dieterich.—p. 555.
Permanent Results of Splenectomy in Hemolytic Icterus. M. Silberberg.—p. 568.
Possibilities of Prevention of Autointoxication in Acute Necrosis of Pancreas. K. Boshamer.—p. 574.
Fermentative Theory of Development of Arthritis and of Spondylitis Deformans. N. A. Podkaminsky.—p. 592.
Traumatic or Nontraumatic Oblique Partition of Patella: Patella Partita and Accident. H. R. Paas.—p. 605.
Roentgenologic Demonstration of Tumors of Mamma. W. Vogel.—p. 618.
Acute Serous Peritonitis and Inflammation of Urachus. H. M. Hinrichsen.—p. 627.
Articular Syphilis. V. Hoffmann.—p. 635.

Experiments on Development of Thrombosis.—König discusses and compares the general reactions following operation, protein therapy and irradiation. In spite of many common symptoms there also exist certain differences, and one is in the behavior of the blood platelets. The author determined the number of platelets as well as the rapidity of their disintegration. He observed that changes persist for a considerable time, that they take a wavelike course and that the number of platelets runs parallel to their resistance. He thinks that the blood platelets that are characteristic for the postoperative period are produced by the intermediate products of the disintegration of the nuclei. He demonstrated the early intoxication by the products of disintegration on the circulation and he considers these products the cause of postoperative thrombosis. The cause for the impairment of the blood platelets by the products of nuclear disintegration is the changed function of the spleen. There is a close connection between the number of platelets and the rapidity of their disintegration on the one hand, and the changed functioning of the spleen on the other. The platelet impairing action of the spleen is due to circulatory changes and can be improved by circulatory remedies.

Demonstration of Peripheral Nerves in Roentgenogram.—Löhr and Jacobi state that in numerous experiments on different organs, in the course of which they injected a thorium dioxide preparation, they found that whenever thorium deposits are made these disappear gradually by way of the lymph nodes, and they reason that by means of this thorium dioxide preparation it should be possible to visualize the perineural lymph spaces in the roentgenogram. In several patients with cerebral disturbances, in whom the arteriography of the cerebral vessels was done by way of the internal carotid artery, some of the thorium dioxide preparation accidentally entered the bundle of nerves of the cervical vessels. This bundle is well separated from the neighboring tissues by connective tissue, and it was discovered that the roentgenogram reveals the passage of the thorium preparation along the lymph sheaths of the large nerve trunks, which become visible. The authors further relate what they observed when small quantities of the thorium preparation were introduced into the lumbar sac, and they think that by means of the injection of the thorium preparation not only the entire lymphatic system of the lumbar sac can be demonstrated, but also the finer lymph channels of the nerve fasciculi of the cauda equina. They think that this may be of great help in the diagnosis of tumors; but the method has not advanced beyond the experimental stage and cannot therefore be recommended as yet.

Subchondral Focal Disease of Third Metacarpus.—Dieterich describes the clinical histories of seven patients with a characteristic disease process on the head of the third metacarpus, a disorder that resembles greatly the impairment of the second metatarsal bone usually referred to as Köhler's disease. The patient had a swelling on the extensor surface of the proximal phalanx of the third finger. Usually there was pain, slight redness and an impediment to movement. Exertion during work frequently made the condition worse and caused an exacerbation of the symptoms. The roentgen picture is of especial significance for the estimation of the disease. When the disorder is protracted and the roentgenogram shows circumscribed vacuole-like areas of lessened density in the metacarpal head, small defects in its articular part, or deformities in the epiphysis, the diagnosis of subchondral focal infection is justified. But the absence of these changes during the earlier stages does not preclude a later development. The frequently demonstrable thickening of the shaft of the metacarpal bone begins with an ossifying periostitis, the etiology of which is at first not understood but becomes clear in the advanced stages. A leveling off or an indentation on the ulnar side of the head are in the beginning the only suggestive changes, and the author thinks that one hardly dares to ascribe pathognomonic significance to them. He further states that he noted a predominance of the female sex among his patients, and also that the patients were comparatively young. He stresses that the differential diagnosis of syphilis, tuberculosis and primary arthritis has to be considered. His conception of the nature of the disease he bases on the histologic aspects of the process. The histologic examination revealed a subchondral focal disorder with small remnants of necrotic trabeculae of the bone, replacement of the bone defect by connective tissue, callus-like bone formation in the surroundings, and intrusion of articular cartilage. The author thinks that the bone necrosis is primary whereas the other changes are secondary. In discussing the therapy of the subchondral focal disorder of the head of the third metacarpus he states that in the early stages a conservative treatment is advisable, such as immobilization in combination with the production of hyperemia by the application of heat. Surgical intervention he considers justified only when the disorder has existed for years and when it gives promise that it will improve the working capacity. In one instance he performed the transverse resection of the metacarpal head, and when the patient was discharged the pains had disappeared and the mobility of the fingers was satisfactory. Whether the partial lengthwise resection of the head with preservation of a part of the articular cartilage gives better functional results, the author is unable to decide.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

97: 323-464 (Aug. 17) 1932

*Late Epilepsy. E. Krapf.—p. 323.
Thrombosis of Basilar Artery and Vascularization of Pons. L. Pines and E. Gilinsky.—p. 380.
Myelogenetic Investigations on Cerebellar Portion of Pyramidal Tract. Béla Hechst.—p. 388.
*Simultaneous Continuous Measurement of Suboccipital and Lumbar Pressure of Cerebrospinal Fluid by Means of Kymographion. E. von Thurzó and A. Piróth.—p. 397.
Influence of Hearing on Stuttering. A. Kern.—p. 429.

Late Epilepsy.—Krapf points out that the term late epilepsy has at times been used indiscriminately in that it has been applied to all forms of epilepsy, irrespective of etiology, provided the patient was of advanced age. He advises against this interpretation of the term and thinks that it should be applied only to those forms in the etiology of which aging or involu-

tion actually plays a part, and in his extensive treatise he uses the term late epilepsy only in this sense of involutionary epilepsy (that which occurs in the course of the aging process). After reporting numerous clinical histories, he discusses the problems of the so-called senile and arteriosclerotic epilepsies. He considers the occurrence of senile epilepsy (symptom of a senile cerebral process) as improbable and cites factors for this opinion. In discussing arteriosclerotic epilepsies, he first evaluates the cardiovascular form (epilepsy as a symptom of peripheral arteriosclerosis) and then the cerebro-arteriosclerotic form. In discussing the first of these two he shows why the epileptogenic significance of cardiac and vascular disorders should not be undervalued, and then he estimates the possibilities of a connection between vascular cerebral foci and epileptic attacks, and he shows that it is more probable that foci develop as the result of attacks than that the attacks are the result of foci. In the following part he discusses the more recent observations and researches, and on the basis of these he rejects the nutritional disturbances that result from cerebral arteriosclerosis as the producers of late epilepsy. After he has thus eliminated the senile and arteriosclerotic processes as causes of late epilepsy, he attempts to show that late epilepsy is generally a symptom of arterial hypertension. In this connection he first discusses the constitution and the circulatory aspects of the patients with late epilepsy and comes to the conclusion that not only do the majority of patients with late epilepsy have hypertension but hypertension is actually the cause of late epilepsy; yet he maintains that not so much the intensity of the hypertension but rather the fluctuations in the blood pressure are the essential cause of the epileptic attacks. However, he is convinced that in addition to the hypertension these patients also have a predisposition for epilepsy. He also evaluates other causes that occasionally may have etiologic significance, such as misuse of alcohol and cranial trauma. In the last part he discusses the nosologic position of late epilepsy, especially whether it is a genuine or a symptomatic epilepsy, and in the course of this he shows relations between hypertension and the menopause, and he evaluates problems of menopausal epilepsy as well as of epilepsy in general.

Measurement of Pressure of Cerebral Fluid.—According to von Thurzó and Piróth, the continuous measurement of the pressure of the cerebrospinal fluid after double puncture gives the most reliable information about pressure conditions in the cerebrospinal fluid system. The course of pressure fluctuations can be observed with the exactitude of one-fifth second. The modification tests, such as touching the jugular vein for one second, compressing it for fifteen seconds, employing the abdominal pressure or withdrawing 10 cc. of cerebrospinal fluid, cause characteristic qualitative as well as quantitative fluctuations in diseases with increased pressure, as in epilepsy, cerebral tumors and total or partial blockage of the cistern and of the spinal cord. In general the authors observed that in cases presenting increased pressure the influence of these modification tests is more noticeable. But also in respect to age, sex and neuropathic constitution the behavior of the cerebrospinal fluid pressure shows considerable qualitative and quantitative changes. In normal pressure it is observable that during the compression of the jugular vein the increase in pressure is much more rapid than the decrease, the first taking place in from one to two seconds, whereas the decrease requires about four seconds. In patients with cerebral tumors there is a retardation in the pressure decrease after the tests, and these cases also show that the pressure increase following abdominal pressure is much less than that which follows pressure on the jugular vein. A considerable discrepancy between the lumbar and the occipital pressure during the tests signifies decrease in the depth diameter of the cisterna magna. Epilepsy is characterized by instability and by the so-called reactive reduction in the pressure of the cerebrospinal fluid. The regulating mechanism of the cerebrospinal fluid pressure is extremely complicated and in different disturbances different factors predominate. In the modification of the cerebrospinal fluid pressure by the hemodynamic conditions, the blood vessel reflexes have to be taken into account.

Deutsche medizinische Wochenschrift, Leipzig

58: 1313-1350 (Aug. 19) 1932

Colonic and Rectal Polyposis. H. Strauss.—p. 1313.
Aspects of Psittacosis. C. Prausnitz and W. Stepp.—p. 1316.
*Psychogenic or Habitual Vomiting. W. Klimke.—p. 1318.
*Danger of Injury of Peripheral Nerves in Intravenous Injection: How to Avoid It. J. Zutt.—p. 1321.
Hypophyseal Cachexia and Related Conditions. E. Steinitz.—p. 1323.
Injection Treatment of Hemorrhoids. H. Elsner.—p. 1324.
Experiences with Sugar Diet in Pyuria in Children. E. J. Schmitz.—p. 1327.
Difficulties in Interpretation of Tumors of Mamma. M. Samuel.—p. 1329.
Explanation of Unclear Cases of Colics of Gallbladder. J. W. Härtl.—p. 1329.
Reduction of Possibility of Injury by Smallpox Vaccination Without Essential Reduction of Protective Value of Vaccination. W. Koelzer.—p. 1330.
Alcoholism and Mortality. G. Schmölders.—p. 1331.
Income of Physicians in Germany. K. Finkenrath.—p. 1332.

Psychogenic or Habitual Vomiting.—Klimke illustrates the aspects of psychogenic vomiting by means of four case histories. All patients were under mental strain, in a depressed mood, and of a more or less psychopathic constitution. Lack of appetite and gastric pains are considered as the accompanying symptoms of depression, and the tendency to vomiting is, according to some psychiatrists, an evolutionary, rudimentary purpose reaction, which in these persons is present as an inhibition. Organic changes to which the gastric disturbances could be traced are not detectable, and for this reason surgical treatment is useless. As shown in the case histories, only psychotherapeutic measures bring results. Another case shows that in patients with psychogenic or habitual vomiting the possibility of goiter should also be taken into consideration.

Injury of Nerves in Intravenous Injection.—Zutt points out that if an injury that results from a mistake in the technic of a therapeutic intervention is rare, the likeliness of its occurrence is frequently overlooked, and its causes and their avoidance are not sufficiently investigated, a condition that applies especially to peripheral nerve injuries following intravenous injection. Several case reports show that all patients who sustained an injury of the peripheral nerves as the result of intravenous injections felt a severe pain at the site of injection at the moment the needle was introduced. This indicates that in every case portions of the medicament entered the paravenous tissue, and the fact that in the majority of cases the injections were made by experienced physicians indicates that even in case of considerable experience and skill the paravenous injection cannot always be avoided. In the cases described by the author, three different types of injuries were observed. In one group the median nerve as well as the entire cutaneus antebrachii medialis were injured. In another instance the volar branch of the cutaneus antebrachii medialis was impaired, and yet another showed an isolated injury of the cutaneus antebrachii lateralis. The author explains these injuries on the basis of the anatomic conditions, and he thinks that such injuries of the nerves can be avoided by making the injection into the median vein; but it should never be made into the vena basilica, where it passes through the sulcus bicipitalis medialis, for here the danger of injury of the cutaneus antebrachii medialis and of the median nerve is especially great. Because a direct mechanical injury of a nerve can be excluded, the author considers the chemical action of the injected substance responsible for the injury. He also calls attention to the slight tendency for restitution following these injuries of the nerves.

Klinische Wochenschrift, Berlin

11: 1409-1448 (Aug. 20) 1932

General Criticism of Protective Vaccination Against Infectious Diseases. R. Doerr.—p. 1409.
Pathogenesis of Sclerodermia and Rôle of Spinal Sympathicus. K. Kuré, K. Yamagata and Y. Kaneko.—p. 1415.
Action of Choleretic Substances, Especially of Sodium Dehydrocholate on Galactose Tolerance of Liver. K. Paschkis.—p. 1418.
Insulin Dextrose Therapy of Subacute Atrophy of Liver. Annemarie Buresch.—p. 1420.
Hematinemia as Symptom of Pernicious Anemia. K. Bingold.—p. 1423.
*Diastase Content of Cerebrospinal Fluid in Syphilis. A. Marchionini and Berta Ottenstein.—p. 1424.
Elimination Type of Serologically Demonstrable Mendelizing Characteristic. F. Schiff and H. Sasaki.—p. 1426.

Function of Liver and Insulin Susceptibility. E. Forsgren.—p. 1429.
Possibility of Dietetic Production of Acetonemic Vomiting. H. Seckel. —p. 1430.
Simple Device to Fasten Quickly and Easily Detach the Recording Paper of Kymographion. A. Heinrich.—p. 1432.
Adsorption and Elution of Haptens, Particularly of Cerebral Antigens. H. Rudy.—p. 1432.
Fishes as Test Objects for Pharmacologic Experiments. E. Herzfeld and P. Mayer-Umhöfer.—p. 1432.

Diastase in Cerebrospinal Fluid in Syphilis.—Marchionini and Ottenstein observed a reduction or a complete disappearance (values between 0 and 10 mg. per hundred cubic centimeters) of the diastase from the cerebrospinal fluid in nearly 100 per cent of patients with clinically demonstrable neurosyphilis (cerebral syphilis, locomotor ataxia, dementia paralytica) who had not received treatment, and in 80 per cent of the patients who had been treated. In other forms of syphilis, without clinically demonstrable involvement of the central nervous system (secondary, tertiary, latent and congenital syphilis) the disappearance of diastase was noticeable in 79 per cent of the patients who had not been treated and in 60 per cent of those who had received treatment. From these observations the authors conclude that when the spirochetes become generalized an impairment of the central nervous system is more frequent than was detectable with the former test methods. They also observed that the disappearance of diastase from the cerebrospinal fluid is independent from the blood Wassermann reaction. They recommend the determination of the diastase content as a new specific syphilis reaction of the cerebrospinal fluid, for when they compared the diastase test with other specific and nonspecific cerebrospinal fluid tests, such as the Wassermann reaction, number of cells in the fluid and the colloid reactions, they found that its sensitivity was noticeably superior.

Medizinische Klinik, Berlin

28: 1157-1190 (Aug. 19) 1932

Intracutaneous Vaccination. F. Schleissner.—p. 1157.
*Chronic Leukemias Without Enlargement of Spleen and of Lymph Nodes. H. Hirschfeld.—p. 1160.
Superiority of Cultural Over Microscopic Demonstration of Gonococci. H. Fröhlich and P. Jordan.—p. 1163.
Sedimentation Speed of Erythrocytes in Carcinoma of Female Genitalia. H. Keckeis.—p. 1164.
Clinical Aspects of Granuloma Annulare During Childhood. O. Heller. —p. 1165.
Primary Carcinoma of Lung and Metastatic Sarcoma of Mediastinum. G. Herrnheiser.—p. 1166.
Hepatitis and Cholecystitis in Scarlet Fever. O. Saxl and F. Gross. —p. 1168.
Hydrogen Arsenide Poisoning: Case with Peculiar Clinical Course. H. Dibbern.—p. 1170.

Chronic Leukemias Without Enlargement of Spleen.—Hirschfeld reports cases of chronic myeloid leukemia without enlargement of the spleen. One case is noteworthy because the necropsy revealed chloroleukemia, and from this it is concluded that whenever a myeloid blood picture is detected and an enlargement of the spleen is absent, chloroma should be thought of. In the other cases a moderate swelling of the spleen developed just before death, so that it cannot be doubted that these were instances of true myeloid leukemia. This shows that it is possible that a chronic myeloid leukemia may exist for a long period without a splenic enlargement being demonstrable. The author also describes cases of chronic lymphoid leukemia in which swelling of the lymph nodes and of the spleen was absent. Two cases are especially noteworthy because in the course of erysipelas, when a neutrophilic leukocytosis was expected, a lymphocytosis was discovered and this blood picture remained practically unchanged during and after the erysipelas. Such a blood picture has never been observed in erysipelas and it is unlikely that this infectious disease produced such a pronounced lymphocytosis instead of a neutrophilic leukocytosis. However, it is as yet not possible to determine definitely whether there existed a lymphatic leukemia without demonstrable involvement of the lymphatic apparatus, which was not influenced by the intercurrent erysipelas, or whether the erysipelas led to the manifestation of the lymphatic leukemia. In the discussion as to why it is that in some forms of leukemia enlargement of the lymph nodes and of the spleen are not clinically demonstrable, two possibilities are considered. Either these organs are not involved in the leukemic process or microscopic changes may be present which do not manifest themselves in an enlargement. At any rate, it is probable that in these cases the lymphatic hyperplasia leading to the leukemic blood status is localized primarily in the bone marrow. In the conclusion the author calls attention to the fact that not all the reported cases would have been correctly diagnosed if incidentally the blood had not been examined, and he thinks that a morphologic examination of the blood should be obligatory in every patient.

Monatsschrift für Kinderheilkunde, Berlin

54: 85-244 (Aug. 10) 1932

*Pediatric Urology. W. Baumann.—p. 85.
*Treatment of Advanced Stage of Diabetes in Children (Total Diabetes). E. Walenta and M. Trusen.—p. 185.
Calcium and Phosphorus Metabolisms in Development and Cure of Rickets: Experiments on Rats. Hima Stolzberg and G. Meyer zu Hörste.—p. 195.
Magnesium Rickets: Experiments on Rats. G. Meyer zu Hörste.—p. 203.
Treatment of Pyuria by Means of Soy. A. Mader.—p. 212.

Pediatric Urology.—Baumann is convinced that in the disturbances in children usually diagnosed as pyuria it is frequently possible to make a more exact diagnosis. He advises that in disorders of the urinary passages of children cystoscopy as well as urethral catheterization should be resorted to, and that at least one of the staff physicians of a children's clinic should master the technic of these methods. He thinks that in spite of the fact that in recent years intravenous pyelography has been introduced, retrograde pyelography has not lost in diagnostic value and that the two methods may frequently be employed together.

Treatment of Advanced Stage of Diabetes in Children.—Walenta and Trusen state that in progressive diabetes during childhood there usually develops in the course of a few years a stage during which the islands of Langerhans no longer form insulin. This stage is designated as total diabetes and is recognized by the constant and comparatively high insulin requirements, by the absence of signs of improvement and by great fluctuations in the blood sugar curve. Since a restricted diet is no longer necessary in addition to the insulin therapy, these children are given a mixed diet and sufficient insulin to assure well being. According to the age of the child, from 30 to 70 units of insulin is usually sufficient. If the insulin is given regularly, coma does not develop, even during infections. However, this treatment is advisable only for children with total diabetes. In the milder stages, attempts should be made to maintain the functional capacity of the insular apparatus as long as possible by means of strict dietary and insulin treatment.

Strahlentherapie, Berlin

44: 601-820 (Aug. 10) 1932

*Relations Between Ray Susceptibility of Malignant Tumors and Their Matrix. J. Borak.—p. 601.
*Tumors of Embryonal Structure (Embryocytomas) and Their Radiosensitivity. M. Nemenow.—p. 655.
Protracted Fractional Roentgen Irradiation and Remarks on Simple Fractional Roentgen Irradiation. R. Stewart-Harrison.—p. 679.
*Observations on Hemogram in Roentgen Irradiation. E. Hayer.—p. 687.
Results of Roentgen Irradiation in Chronic Leukemias. J. Arendt and W. Gloor.—p. 715.
Action of Smallest and of Larger Roentgen Doses in Serious Diseases of Blood. E. Steinitz.—p. 739.
Pachymeningitis Following Roentgen Irradiation? A. Lorey and G. Schaltenbrand.—p. 747.
New Dosimeter for Surface and Deep Therapy. H. Küstner.—p. 759.
Action of Timely Distributed Doses of Roentgen Rays on Course of Nuclear Division Experiments on Vicia Faba Equina. O. Jüngling and H. Langendorff.—p. 771.
Apparatus for Roentgen Surface Therapy. V. Wucherpfennig.—p. 783.
Simple Method for Determination of Position of Cervix and of Uterus in Roentgen Therapy. H. Braun.—p. 793.
New Body Cavity Roentgen Tube. T. Zimmer.—p. 797.
Roentgen Injuries of Eyes and Their Prevention by Means of Protective Prostheses. E. Wölfflin.—p. 800.

Relations Between Ray Susceptibility of Malignant Tumors and Their Matrix.—Borak shows that in irradiation of malignant tumors the constitutional as well as the conditional factors that determine the ray sensitivity of a tumor must be determined. The constitutional factors of ray sensitivity are determined by the nature of a tumor and of its matrix and give information about the ray therapeutic possibilities of a tumor type. It has to be determined from what matrix the tumor in question is derived and whether the matrix from which the tumor has developed can or cannot be destroyed by the rays

without causing necrosis of the neighboring tissues. If the matrix can be destroyed by ray action without necrosis of the neighboring tissues, the size of the dose required for this has to be determined. If, however, the matrix cannot be made to disappear without necrosis of the neighboring tissues, it has to be determined whether the tumor is relatively mature or immature or whether a metaplasia exists. The conditional factors of ray sensitivity are determined by the character of the surrounding tissues or by that of the regional or distant organs, and they give information about the possibilities of ray therapy in the individual case. It has to be determined whether the neighboring organs are infiltrated by the tumor, whether the neighboring organs have been injured otherwise (infection, operation, irradiation), whether regional metastases are present, and whether distant metastases exist. For the prognosis and in determining the indications for and the technic of irradiation, it is necessary that in addition to these biologic factors the rôle of other clinical factors and the physical properties of the rays be considered.

Tumors of Embryonal Structure and Their Radiosensibility.—On the basis of observations on several thousand cases of malignant tumors that in recent years were treated in a Leningrad institute for roentgenology and radiology, Nemenow reaches the conclusion that the majority of malignant tumors are only slightly radiosensitive. However, in some organs, particularly in the incretory glands, malignant tumors may develop that are extremely sensitive to irradiation. In regard to their histologic structure these tumors resemble one another, but they can be classified neither with the carcinomas nor with the sarcomas but rather form a special group, for which the author suggests the term malignant embryocytoma. Yet among these tumors there are also some that do not yield to irradiation, and for this reason the author differentiates between radiosensitive and radioresistant embryocytomas. He also points out that the radiosensitivity of the tumor makes an estimation of the degree of the differentiation of the cells possible, for he maintains that there are no radiosensitive tissues that at the same time are highly differentiated. The radiosensitive embryocytomas and their metastases have the tendency to infiltrate the interstices of the surrounding tissues but do not destroy the tissues by proteolysis. As regards radiosensitivity and the relation to the surrounding tissues (type of infiltration), some of the lymphosarcomas, some of the bone tumors (sarcoma Ewing) and some tumors that are usually classified as endotheliomas belong to the group of radiosensitive embryocytomas. Because the roentgen rays influence the metastructure of the cells, the molecules and atoms, it is as a rule impossible to estimate the radiosensitivity on the basis of the histologic picture that reveals only the gross structure of the cells.

Observations on Hemogram in Roentgen Irradiation.—The blood pictures that Hayer discusses in this report are those of patients with various kinds of disturbances. Consequently the site of irradiation as well as the dosage differed. But in spite of this the hemograms of all these patients show a certain uniform tendency following the irradiation with roentgen rays. After each ray treatment the total number of leukocytes decreases. This reduction, which in the first few days may be preceded by a slight increase, is largely independent of the size of the dose, and, if the blood forming organs themselves have not been irradiated, also of the site of ray application. It depends more on the type of the disease; that is, on the degree in which the blood forming organs were already taxed before the irradiation. Such an exertion usually becomes manifest in an increase in the total number of leukocytes, and after ray application one sees in these cases a more rapid and noticeable decrease in the leukocytes, whereas, in patients in whom the blood picture was taxed only slightly or not at all, the irradiation effects only a negligible decrease. The duration of the decrease in the leukocytes and particularly the restitution to normal numbers of cells is less dependent on the type of disease (except perhaps in case of carcinoma) than on the dose of rays. Thus one observes in inflammatory disorders, in which small doses of rays are applied, that the rapid decrease of leukocytes is again followed by an increase as soon as the influence of irradiation is over. However, if large doses have been applied, a much longer time is required until the original values have been reached. The author further discusses the influence of ray therapy on the various types of leukocytes. He found that the lymphogenic blood forming organs have a much greater radiosensibility than the myelogenic blood forming organs. The latter tolerate much larger doses and do not react as suddenly, but the author thinks that this is due to the fact that, with the exception of total irradiation, the myelogenic blood forming organs are never irradiated so completely as are the lymphogenic ones. Otherwise the behavior of the different morphologic forms of leukocytes is determined partly by their condition before irradiation and partly by the quantity of rays applied. When smaller doses are applied, that type of cell which by overproduction has replaced other cells shows the greatest radiosensibility and decreases most rapidly. By this the normal ratio between the different types is gradually reestablished. When large doses are administered, a different reaction can be expected because the inhibitory effect is greater. The author thinks that the inhibitory effect of the roentgen rays on the blood forming organs explains the irregular and limited appearance of immature cells. It has been proved before that when the long bones are irradiated, as is done in case of polyglobulism, the red blood picture is influenced; but it has not yet been definitely demonstrated whether in other forms of irradiation, in which the action is mostly indirect, the roentgen rays influence the red blood picture.

Virchows Archiv. f. path. Anat. u. Physiol., Berlin

285: 605-804 (Aug. 15) 1932

*Do Tubules of Kidneys Have Secretory or Resorbing Functions? G. Ekehorn.—p. 605.
Significance of Hemoglobin in Pathology. I. I. Lintwarew.—p. 625.
Echinococcus in Human Beings. H. Schmieta.—p. 650.
Plurifocal Alveolar Echinococcus with Involvement of Spleen. G. H. Bartsch and A. Posselt.—p. 665.
Double Anthrax Infection (Skin and Stomach). L. Galvan.—p. 687.
Pathologic Anatomy of Epithelial Inflammation ("Dermomyositis") in Hog Ascariasis. G. Lübinsky.—p. 691.
Transverse Stripes on Brachial Artery of Human Beings. J. Lewin.—p. 704.
*Biologic Resistance Capacity of Megakaryocytes of Bone Marrow. P. W. Ssipowsky.—p. 723.
Development of Iron and Calcium Deposits in Spleen. W. Brackertz.—p. 734.
Calcification of Stomach of Mink. E. Heidegger.—p. 747.
*Trophic Disturbances of Stomach Under Influence of Bilateral Vagotomy: Experimental Morphologic Investigations. J. M. Lasowsky and A. N. Ptschelina.—p. 755.
Anatomic Investigations as to Whether Tuberculosis Can Be Influenced by Viosterol. Käthe Jägermann.—p. 764.
Congenital Tuberculosis. H. Chiari.—p. 779.

Do Kidney Tubules Secrete?—Ekehorn cites numerous factors that indicate that the tubules in well glomerulized kidneys do not secrete plasma preformed urinary constituents but rather resorb a compound fluid; namely, the excess of water and of various substances contained in the glomerular filtrate. With the exception of creatinine and perhaps of sulphates, this resorbate contains not only all plasma preformed urinary constituents but also all diffusible substances of the plasma that are not contained in the finished (vesical) urine. This tubular resorption is a vital process that is regulated, at least in its most important aspects, by the hormones and ions contained in the plasma and probably also by its content in various eliminable substances. The quantity and the composition of the resorbate fluctuate and these fluctuations are of greatest significance for the qualities of the finished urine.

Resistance Capacity of Megakaryocytes of Bone Marrow.—According to Ssipowsky, acute disturbances of the local circulation, fluctuations in temperature, hemolytic poisons and hypertoxic bacterial infections produce changes in the megakaryocytes. These changes are of a degenerative nature (pyknosis, karyorrhexis, plasmorrhexis). Pyknosis of the nuclei of the megakaryocytes is present even if the other cells of the bone marrow do not show morphologic changes. The megakaryocytes are the most perishable cell forms of the bone marrow.

Trophic Disturbances of Stomach After Bilateral Vagotomy.—In experiments on dogs, Lasowsky and Ptschelina made the following observations: Bilateral vagotomy in the thorax did not produce erosions or acute ulcers of the stomach, but it did lead to nutritional disturbances in the gastric glands with the following morphologic manifestations: On the surface epithelium, in the pylorus cells and in the accessory cells,

increased formation of mucus takes place In the main cells there occurs in addition to the normal serous secretion also secretion of mucus. Some of the main cells become atrophic and the corresponding glandular spaces become dilated. In the covering cells the granules of secretion disappear and the body of the cells becomes vacuolated. In the main cells the changes develop sooner than in the covering cells. These morphologic changes are accompanied by functional changes. These changes in the gastric glands, which occur without inflammatory manifestations, are the same as those observed in gastritis, and from this the authors conclude that many morphologic characteristics of gastritis are not specific for it.

Zeitschrift f. d. ges. Neurol. u. Psychiatrie, Berlin

141: 321-488 (Aug. 20) 1932

Hemiballism and Nucleus Hypothalamicus. K. von Santha.—p. 321.
Psychiatric-Neurologic Casuistics of Practice of Physician for Athletes. E. Jokl and E. Guttmann.—p. 343.
Psychology and Psychopathology of Experiences of Instinct and Will. K. Schneider.—p. 351.
Acute Genuine Hematoporphyria. P. Eichler.—p. 363.
Disturbances in Basal Metabolism Under Influence of Emotion in Manic-Depressive Psychosis. Halina Jankowska.—p. 380.
Disturbances of Acid-Base Equilibrium in Manic-Depressive Psychosis and Under Influence of Emotions. Halina Jankowska.—p. 394.
*Clinical Aspects of Various Forms of Amaurotic Family Idiocy: Differentiation from Laurence Biedl's Syndrome. F. H. Ritter.—p. 402.
*Relations of Diseases of Accessory Cavities to Mental Disturbances. F. A. Pickworth.—p. 420.
Experimental Modification of Cerebral Function by Irradiation with Short Waves in Human Beings. H. Hoff and E. Weissenberg.—p. 460.
Syndrome of Impulsive Erethism During Childhood. H. Heinze.—p. 469.

Amaurotic Family Idiocy.—Ritter points out that the term amaurotic family idiocy, which originally was applied to clinical aspects, has undergone a decided change, since it is now applied to anatomic changes, particularly to changes in the ganglion cells. These changes may occur in patients with widely differing clinical symptoms. The author is undecided as to whether the term should be changed but thinks that many factors militate against a change in terminology. However, a differentiation of the Laurence-Biedl syndrome from the juvenile form of amaurotic family idiocy he considers important, although as yet this differentiation has not received consideration in the literature. He relates the clinical histories of three children, aged 8, 9 and 10, respectively, who all presented the syndrome obesity, visual disturbance by atypical retinitis pigmentosa, and feeblemindedness. Two were clinically identified as cases of juvenile amaurotic idiocy. The third case, in which there also existed polydactylism, he considers as a case of Laurence-Biedl's disease. So far obesity has only rarely been observed in cases of juvenile amaurotic family idiocy. In view of the anatomically established fact that in many cases of this disease the deeper lying cerebral centers are especially involved, the obesity must be considered of central origin. If careful observations are made, it is probable that slight degrees of obesity are more often detected in amaurotic family idiocy than has heretofore been supposed. The author also suggests that investigations should be made as to whether there is a connection between the pathologic accumulation of fat and the final stage of amaurotic family idiocy, in which there is a complete disappearance of fat and a fat infiltration of the organs.

Diseases of Accessory Cavities and Mental Disturbances.—Pickworth's discussion of the interrelation between chronic disorders of the accessory cavities and toxic or infectious processes within the cranial cavity is based on careful studies made in the course of several hundred postmortem examinations. The author also cites corroborating reports from the literature and he discusses the theoretical significance of chronic infections for the pathogenesis of mental disturbances. He thinks that mental disorders may develop as the result of functional impairment of the brain, which is due either to a prolonged action of bacterial toxins on the brain or to disturbances in the capillary blood supply of the brain which are the result of the same toxic cause. Since the arterial blood supply of the brain passes in close proximity to the sphenoidal sinus, it is possible that in case of chronic inflammation of this cavity a sufficient quantity of toxic products is absorbed in the course of time so as to lead to a functional impairment of the brain. The author shows and explains illustrations of processes in the cerebral tissues that develop in case of infectious processes in the neighboring tissues.

Zeitschrift für Krebsforschung, Berlin

37: 121-234 (Aug. 20) 1932

Neurotropism of Neoplasmatases. E. Fränkel.—p. 121.
Occurrence of Tumor Specific Antigens in Malignant Tumors: Experiments on Rat Sarcoma. F. Klopstock and E. Simon.—p. 127.
Influence of Tuberculous Infection on Development and Transmission of Rous Sarcoma. A. Costa.—p. 137.
*Behavior of Reticulo-Endothelial Apparatus During Growth of Transplantation Tumors. A. Calò.—p. 151.
Incidence of Cancer in District of Zusmarshausen. L. Endrös.—p. 165.
Action of Roentgen Rays on Experimental Tar Cancer. G. A. Sedginidse.—p. 195.
*Cancer and Heredity. J. Cholewa.—p. 215.
Hair Regeneration in Tar Mice as Constitutional Sign. N. G. Ssobolewa.—p. 224.

Reticulo-Endothelial Apparatus and the Growth of Tumors.—Calò reports his observations on mice inoculated with carcinoma of Ehrlich's strain. He found that in the course of the development of a transplantation tumor there develop in the liver circumscribed perivascular foci, which reach their height seven days following the inoculation and then gradually recede to complete disappearance. They consist primarily of histiocytes. Simultaneously with this focal reaction there appears a diffuse reaction of enlarged Kupffer's star-shaped cells. However, the course of this diffuse reaction does not necessarily follow exactly the course of the focal reaction. Similar foci appear in the lungs and in the kidneys, and they take about the same course as those in the liver, but in the kidneys they are more frequent and in the lungs they are rarer. The spleen reacts to the transplantation with a lymphocytic hyperplasia, which then, however, disappears and gives way to a reticular one. The author considers these reactions as an expression of defense reactions of a nonspecific nature.

Cancer and Heredity.—Cholewa first gives a review of the literature of this problem and then relates his observations. He gives several geneologic tables. He repeats the advice of Caspari, who warned against the marriage of persons both of whom have cancer in their ancestry.

Zentralblatt für Chirurgie, Leipzig

59: 2017-2080 (Aug. 20) 1932. Partial Index

Experiences in Operative Treatment of 150 Perforated Gastroduodenal Ulcers. E. Kreuter.—p. 2017.
Technic of Osteosynthesis in Fracture of Neck of Femur. S. Johansson.—p. 2019.
*Treatment of Shock by Intravenous Injection of Hypertonic Solutions. F. Schück.—p. 2027.
Implant into Wall of Bone in Surgical Treatment of Bone Fractures. W. Förster.—p. 2029.
*Operative Treatment of Nonresectable Duodenal Ulcer and of Ulcer Located High on Lesser Curvature. H. Börger.—p. 2043.
Etiology of Pulsion Diverticulum of Esophagus. A. Rupp.—p. 2049.
Skin Incisions on Patella. L. Drüner.—p. 2049.
Surgical Therapy of Tuberculosis. W. von Gaza and P. G. Schmidt.—p. 2050.

Treatment of Shock.—Schück states that, in conditions of traumatic or toxic shock in which vascular paralysis predominates, the intravenous injection of 30 cc. of a 40 per cent solution of sugar is just as helpful as the injection of 500 cc. of a sodium chloride solution. The sugar solution not only exerts a favorable influence on the heart but also is capable of withdrawing fluids from the tissues and forcing them into the vascular system. The injection of the 30 cc. of the hypertonic solution of sugar draws about 500 cc. of fluid into the vascular system and thus effects a filling of the vessels and has practically the same effect as the infusion of 500 cc. of the sodium chloride solution. The author points out that the injection of the hypertonic sugar solution is not intended to replace blood transfusion or the infusion of larger amounts of sodium chloride solutions, so far as the latter procedure is necessary to increase the total amount of body fluids, but it is of equal value with those two methods if the object is only a rapid filling of the vascular system. For this purpose it is simpler and quicker than any other technic. Instead of the apparatus for sterile sodium chloride infusion, the infusion of the hypertonic sugar solution requires only a 10 cc. syringe and an ampule, both of which can be carried ready for use in the practitioner's satchel. Thus the method is especially valuable in accident and in rural practice. In case of considerable loss of blood, the hemorrhage has to be stopped before the injection is made. The author emphasizes that he never observed impairment of the vascular

system or thrombosis or embolism following the use of the 40 per cent sugar solution, and because it is harmless and technically simple he recommends it to the practitioner.

Operative Treatment of Duodenal Ulcer.—Reports of other surgeons on this problem induced Börger to give his own opinions. In summarizing his discussion he states the following points: In nonresectable ulcer and if stenosis is present, the formerly accepted indications are still valid and the results can be considered as good. In other cases, however, the results of gastro-enterostomy do not speak for the practicability of this operation for cases of nonresectable duodenal ulcer. A different evaluation should be applied to the palliative resection. The results of the latter, aside from the fatalities, are equal to the results in resection of ulcer. That he obtained these good results the author ascribes to the fact that in every case the pylorus was also removed, a procedure evaluated highly by several other experienced surgeons. On the other hand, this method involves the technical impossibility of a secure suture of the duodenal stump, and also the great danger of subsequent hemorrhage and perforation. The insufficiency of the suture can probably be avoided in such cases, if the pylorus is not removed, but then the final results will become more unfavorable, and against the subsequent perforation and against hemorrhage from the remaining ulcer, even this method is no protection. Stimulated by a report on the cure of chronic ulcer by feeding the patient by means of a duodenal catheter, the author intends to try this method in case of nonresectable duodenal ulcer. But because the introduction of the permanent catheter through the mouth is unpleasant to the patient, he intends to employ Witzel's method and to introduce a Nélaton catheter through the pylorus into the duodenum. At this method he arrived in the course of treating an obese patient in whom the ulcer was located high on the lesser curvature. The resection was a failure mainly because of the patient's obesity. For this reason he resorted to Witzel's fistula, by means of which he fed the patient for more than six weeks. The pains disappeared but the high acidity values persisted and for the latter reason a new surgical intervention was made several months later, at which it was found that the ulcer had healed.

Borba s Tuberkulezom, Moscow

10: 233-396 (numbers 4-5) 1932

Tuberculosis and New Building Program. I. I. Ludvinovskiy and M. I. Oifebakh.—p. 251.
Occupational Therapy for Tuberculous Patients of Krasnoe Sormovo. N. E. Vvedenskaya.—p. 254.
New Forms of Work in Tuberculosis Dispensary. M. L. Borshchevskiy.—p. 265.
Practical Problems in Tuberculosis Among State and Collective Farmers. M. A. Klebanov.—p. 279.
Plans for Control of Tuberculosis in Moscow and Outlying District. N. L. Avgushevich.—p. 300.
Plans for Tuberculosis Work in Dispensary System. M. Ya. Babitskiy, E. E. Ben, M. Ya. Vidutskiy, M. V. Gindin and M. L. Goldfarb.—p. 302.
*Non-Acid-Fast Bacillus of Tuberculosis and Treatment with "Atubercular" Antivirus: Microbic Dissociation of Bacillus Tuberculosis. B. L. Mazur.—p. 308.
Tuberculosis and Occupational Therapy. V. L. Einis.—p. 316.
Tuberculosis Among Miners. A. I. Belyaev.—p. 321.
Pneumonoconiosis Among Copper Miners of Allaverd and Kafansk. A. T. Arustamova.—p. 331.
Tuberculosis Among Polygraph Workers of Krasnodar. A. L. Samoilovich and E. Ya. Oblogin.—p. 337.
Etiology of Chalicosis. A. I. Strukov.—p. 342.
Scrofulous Type of Tuberculosis Among Alarsk Buriats. G. I. Kontorovich and M. F. Glagoleva.—p. 345.
Effort to Control Tuberculosis in Villages. R. S. Aizenberg.—p. 363.
Remote Results After Treatment in Tuberculosis Institutions. N. S. Morozovskiy and G. V. Orlovskaya.—p. 374.
Occupational Therapy in Yalta Tuberculosis Institute. D. S. Kvashnin.—p. 380.

Non-Acid-Fast Bacillus of Tuberculosis.—Mazur cites instances from the literature in which pleomorphic forms such as cocci, pseudodiphtheria, club forms, threadlike forms and non-acid-fast rods were reported as connected with the bacterial flora of tuberculosis and claimed as a part of the life cycle of the classic acid-fast bacillus of tuberculosis. He describes several methods by which he succeeded in isolating non-acid-fast cocci and rods in pure culture and how he prevented reversion to the classic acid-fast forms and then describes the cultural and morphologic characteristics of the non-acid-fast rod. He found that each strain had its own individual characteristics; each method is described only as a scheme, and the method for isolating non-acid-fast strains of tuberculosis consists of (*a*) obtaining from a tuberculous process a mixed culture of acid-fast and non-acid-fast rods and (*b*) isolating from this mixed culture a pure culture of non-acid-fast rods (the latter process varying according to the individual characteristics of the separate strains). He further found that, once stabilized, filtrates of four to six weeks old glycerin (2 per cent peptone) broth cultures of non-acid-fast bacilli and cocci demonstrated antivirus properties. The "atubercular" antivirus was first tested on tuberculous guinea-pigs and then used as local dressing for human scrofula, scrofuloderm, tuberculous perichondritis, lupus vulgaris and lupus erythematosus. He gives the history in three cases. The results were favorable in twenty-four cases of scrofula, seven of scrofuloderm and two of vertebral perichondritis. The treatment was given under ambulatory conditions, and chronicity had no effect, although the younger the patient, the more rapid was the cure. There was improvement in one of seven patients with lupus and temporary sedation in osteotuberculosis with fistulas. In two cases of glandular tuberculosis the author used a sensitized vaccine. This was prepared by the use of centrifugated cultures of non-acid-fast rods or cocci emulsified in homologous (titer 1:2,400) serum (two billion organisms in 1 cc. of serum). Injections were made subcutaneously, beginning with doses of 0.1 cc. and increasing the dose by 0.1 cc. every fifth day. In both patients the results were remarkable and the injections were made without accident.

Acta Chirurgica Scandinavica, Stockholm

70: 1-92 (Aug. 29) 1932

Treatment of Fractures of Shafts of the Long Bones, with Particular Reference to Operative Treatment. C. K. Schaanning.—p. 1.
Rare but Typical Mesenterial Cyst. H. F. Harbitz.—p. 28.
Volvulus of Transverse Colon. K. E. Kallio.—p. 39.
*Duodenal Diverticula and Their Significance for Development of Disorders of Biliary Passages. B. Köhler.—p. 59.

Duodenal Diverticula.—Köhler gives a brief review of the anatomy, roentgenology and clinical aspects of duodenal diverticula. The roentgenologic differential diagnosis is dealt with and particular attention is given to the dilatation of the duodenal papilla. The author gives the clinical histories of eight patients with duodenal diverticula, in whom there also existed disturbances of the biliary passages, and he discusses the possibility of an etiologic connection between the diverticula and the disorders of the biliary ducts. He cites cases in which the diverticulum exerted pressure on the choledochus and states that an ascending infection may spread from the duodenum to the biliary passages. Then he mentions other authors who assume that gallstones may be the cause of diverticula, that the region around the duodenal papilla is predisposed to the formation of diverticula, and that this tendency is greater when the choledochus is dilated as the result of calculi and of stasis.

Hospitalstidende, Copenhagen

75: 959-974 (July 28) 1932

*Forty-Six Cases of Perforated Gastric and Duodenal Ulcer. C. Wandel and P. Jacoby.—p. 964.

Forty-Six Cases of Perforated Gastric and Duodenal Ulcer.—Treatment in these cases (only four in women) consisted of simple suture followed by intra-abdominal lavage, in two cases also with gastro-entero-anastomosis. Three patients died shortly after operation, three later. Wandel's after-examination of the forty remaining patients from one to ten years after treatment showed that twenty-four are well or nearly so, six improved but mostly incapable of work, and ten incapable of work with marked recurrence. After-operation had been done in seven cases. In roentgen examination of twenty-one of these cases, Jacoby found only partial agreement between the clinical and the roentgenologic results.

75: 987-998 (Aug. 11) 1932

*Action of Tribromethanol on Liver Parenchyma. J. M. Wollesen and K. Larsen.—p. 987.

Action of Tribromethanol on Liver Parenchyma.—From the results of their investigations on the effect of tribromethanol on the liver in thirteen patients operated on successively under avertin anesthesia, Wollesen and Larsen conclude that the use of tribromethanol does not endanger the liver function.